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Ladris /

was for many ages
It ~~has been~~ unfortunately
the
the practice to wrap up ~~all~~
sciences in the dead languages,
~~too~~ by which means the
knowledge of them was confined
exclusively to the members of
the learned professions. After
the revival of letters by means
of the reformation and the
art of printing, the sciences
were emancipated from the
dead languages, but they
were ^{so much} ~~inveleged~~ in obscure
and ~~very~~ technical terms
as to be intelligible only

However strange it may
seem, I ~~am~~ ~~now~~ maintain
there is not a truth in
medicine that is worth
knowing, or capable of be-
ing applied to the cure of
diseases, but may be com-
prehended by a lady, as
easily as by a gentleman,
and when we consider ^{further} how
much more ^{the charge of} the health
and lives of a family is
committed to its ^{mother} female,
than to its ^{fathers} male head, it
must be admitted that

to
~~by~~ gentlemen. Of late years,
pains have been taken to
render them intelligible to
ladies and even to young
people. The science of medicine
in a particular manner
has undergone a partial
revolution ~~from the labors~~
~~of~~ in this respect, ~~and has~~
~~been fixed~~ but much
remains yet to be done
to ~~render~~ ~~it~~ accommodate
it to the ^{small mind.} ~~state of education~~
~~and~~ The design of the following
~~Lectures is not so much~~

parts of them as will
be I hope be perfectly
intelligible. ~~For~~ I begin
by remarking that Animal
life as applied to the
human body consists
in 3 things Viz:

In order to enable us to
understand our subject it
will be necessary to pre-
mise 3 propositions.

April 16. 1801.

However strange it may
seem, I ~~am sure~~ maintain
there is not a truth in
medicine that is worth
knowing, or capable of be-
ing applied to the cure of
diseases, but may be com-
prehended by a lady, as
easily as by a gentleman,
and when we consider how
much more ^{the charge of} the health
and lives of a family is
committed to its ^{mother} female,
than ^{to its fathers} male head, it
must be admitted that

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some instruction in the
Animal Economy, and
in the principles of medicine
should form an essential
part of ~~this~~ the education
of every woman ~~is~~ who
expects to be the mistress
of a family. Besides ^{watching} ~~taking~~
^{over} ~~care of~~ the health & lives
of her own children & servants,
she will be enabled to act
the part of a Lady Bountiful
by administering medicines
& advice to her ^{poor} neighbours, &
who were unable to obtain
the assistance of a physician.
The lectures which I am about
to deliver, are not intended to

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as a system of instruction in
medicine. Far very far from
it. They will consist of a
selection of such Subjects
as are most practical &
useful, and such as will
lay a foundation for your
improving yourself ^{future}
~~yourself~~ of by
acquisitions of medical knowledge,
by reading & Observation.

The first object of our inquiries
shall be one which is
deeply interesting, ~~to~~ to us
all, and that is the science
of life. To ~~this~~ ^{pursue} ~~the~~
^{the prolonging} ~~process~~ this invaluable ~~process~~
ing, is the business of the

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healing Art; and in order
to do this, with effect
it is necessary to know in
what life consists, and
what are the means esta-
-blished by the Creator for
maintaining it for 50,
60, & even an 100 years,
under the many circumstances
which oppose & threaten its
extinction. The history of
these means shall be the bu-
-siness of our present lecture.

— They are contained in a
~~small~~ pamphlet, which
I published a few years ago
at the request of my pupils.
— I shall read to you such

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young ladies, had ^{the} pleasure of
The last time I ~~was~~ addressing
some of you, I endeavoured
to show you the folly and
impropriety of acquiring
such accomplishments as
were not accommodated
to the present state of society
— manners & government
of the United States. — To
supply the place of these
accomplishments, I beg
leave to offer to your atten-
tion a few plain and
simple remarks upon
such parts of Natural

Philosophy & Chemistry
as are applicable to
Domestic & ^{or kitchen} culinary
purposes. This kind of
knowledge will be useful
to you in a variety of
ways. It will excite a
taste for such books as
treat more fully upon
these subjects, & raise you
above the necessity of stooping
to novels & romances for
entertainment.

2 It will furnish you
with Subjects for rational
& improving conversation
& thereby preserve you
from dishonouring your
Understandings & wasting
your time by deriving all
your conversation from
~~the~~ dress - fashions - or
Scandal.

3 It will ^{cause} ~~make~~ your
Virtue to be sought for
& courted by sensible

Men, & ~~make~~ be the
means of banishing
fools & Coxcombs from
your company. -

4 It will afford you ~~some~~
~~pleasure~~
~~in~~ solitude, and
render you independant
of public amusements
for your happiness.

5 This kind of knowledge
will make you useful
to your parents while
you remain in sub-

ordination to them. &
6th ^{teach you frugality} It will qualify you
& economy & industry
to shine as wives &
mothers - & mistresses
of families when it
shall please God to call
you to fill those im-
portant female stations.

Definition of Chemistry.
- try. -

Heat & mixture two
powerful & universal
agents in nature & art.

we see them every where.
Rain - earthquakes -
meteors &c - mixture
in all arts. Baker. flour
& yeast & water - brewer
malt - hops - water -
Bread founder - Apperline
&c - of Heat - all from
derived from the sun -
lodged in all bodies - excited
1 by percussion - flint &
Steel.
2 by attraction - ~~friction~~ ^{fract-}
wheels - two Pichs by the

Indians.

3 Fermentation - hay,

Sticks -

4 Misture - Limed Water

Ships caught a fire by it

5 Accep of Air - in what is
called phosphorus. -

6 Collected rays of the sun
in a burning glass. -

of the application of a burning body.

One or two laws of

Heat

2 ¹² The pupae this soft

& spongy bodies move
slowly than dense bodies.

hence woven garments
warmer ² than on
silk - hence feather
beds warmest covering
- hence eider down coverlets
so useful. - hence snow
keeps the ground warm
- as in Canada - verdure
early in the Spring - retains
the heat of the earth. hence
the drool of sheep in w^o com.
- tries - becomes hair in
warm - - hence fur houses
& Cur - apes show by this white
coats - hence the use of white

gets to cloaths in summer
of grey or white hair in old
13 lam. Equilibrium of
heat - Lakes - seas - heat

now & warm of air around

& of orchards not freezing

near rivers in the Spring

of the year. — Thawing of

Apples - & other vegetables -

~~Copping of the weight of ice.~~

A season of damp air being so cold in
winter - but disagreeable in summer

Heat ascends - the highest

part of a room the warmest.

Towers in Germany set high -

the French flag high - ascend on

Cold comes in below - & heat

climbs to beds - floor cold -

goes out at the same time

above illustrated by a Candle

Air like heat tends to Equilibrium

& Air heated by reflection - coldness

of summits of mountains - Bal-
loons - Sect: 2nd

Effects of heat

Expansion - all bodies
expand ⁱⁿ heat & contract
in cold except ice. -

Air - in a bladder must ^{be} in
in summer - is ^{very} tight
& in a thermometer

Iron in bolts - traps &c in
clothes &c. - wood for cracks

from water expanding with
heat - pits fire - explosion of ^{red} ^{whisky}
heat - ^{hot iron on spindle} - ^{the}
water expands ^{and}
turns into ice

~~cold~~ - hence ice breaks bottles.
bursts conduit pipes -
- hence its use in crumbling

the ground - hence its effects
in crumbling houses -

See ~~and~~ ^{the} ~~effect~~ ^{of} ~~the~~ ^{the} ~~globe~~ ^{the} ~~at~~ ^{the} ~~the~~ ^{the} ~~equator~~ ^{the} ~~by~~ ^{the} ~~heat~~ ^{the}
of the globe at the equator by heat -

2 Fluidity - all bodies are
capable of it by heat - water
fluid only from heat - be-
comes ice by ^{the} absence of it. ^{ice}
ice at 32°. fire newspaper oil 62°.

3 Evaporation in small bodies
 capable of it - by heat. Its effects
 to produce cold - ~~produce~~ hence

new washed rooms cool, & to
sickly people dangerous - hence
indicating cold people. remarks
120° is kept at 96°
The border the surface is more
evaporation - & removing
excess of matter increases it -
hence windy days dry the
roads - hence windy days

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thing

fuel coldest - remove per-
-oxidation - & give access to
cold air to come in contact
with the body. - great force
as in steam engines -

A flame - ^{fresh} air necessary to
it. Δ ^e cause of flame -
the same in all bodies - may
be common - Air becomes
impure by it - is said to
be phlogistigated - kills ani-
as clay -
mals - & extinguishes a candle

^{A mineral}
The moving form of flame
owing to the action of air on
it - Scot - owing to incom-
-plete consumption of vegeta-
-ble matter - The more perfect

of consumption - the legs
Loos^{as per asper} - ~~Loos~~ if is inflam
mation - as only burnt wood
we infer from ^{the} taking fire
in chimneys -

Effects of heat on Vegetables
- Seeds retreat when heat is too
& divide themselves of all their
flowers - leaves &c - on animals
begins it in children - as
in Egypt - continues it as in
many insects - when ^{it is} ~~heat~~
withdrawn. they become
torpid - and are revived only
by ^{the} return of its cheering
influence. Highly proportioned -

- Too much would expand
all fluids - rivers overflow
y^e banks - solid bodies as earth
be melted - too little - all nature
be tried in icy chains,
If our globe present y^e awful
phenom: of another chaos.

Lect: 3

on mixture

1 solution - 2 mixture
3 diffusion - 1st cold - 2nd heat
if many bodies & only two
can be united. Eg: Salt in V.
& Dr & V.

Decomposition - add Sal of
on Dr^l Sal am - to a solution of
marble in Dr & V. called
Relative attraction - universal -
from nature - tables -

Salts

as (or or or) native - by form.

Acids - mineral - Veg. animal

marbles by^r of Violets red

2 kinds

Alkalies - by^r of Violets green

effervesces wth acids - ~~causes~~ ^{causes}

Elect. Attraction fixed air

separated - weights $\frac{1}{4}$ & 9:

Alkali 3ps - 0.75W: balanced

than mixth wth wth & weights y:

mixed wth air - consists wth it -

known by skin test 4th

Neutral salts

mixture of Acid & Alkali

Kitchen salt - Salt Petre

Glauber salt. -

extensive use in com: life.

com: salt - from springs.
none near $\frac{1}{2}$ ocean. why? -

2. Rocks - ^{process} - ^{to} 3. Sea - why

Salt - 5 preserves from Jentia:

2 is more lustrant - is more

Salt between tropics & temp.
North & South poles. - Flow
cause

Oct. 22 By heat of Sun -

as at Cape Verd Islands. 2nd

from writing an Eng^d & France. X

3 By freezing $\frac{1}{4}$ ice fresh.
 x How refined - $\frac{1}{2}$ oz. of ^{ass. for} ^{in first dist} ^{of} ^{congratulation}
 pure flower & weavings of

Callers - Burns - Jidgerin

horses. - good house wives
earth & indites with ox. -
shd. know this -

Proverbs - Vinegar & Nitre

Earths

They are 1 calcareous or
lime - marble - Chalk - a
great body - esp^d two first
in Pennsylv^a - Chalk in Ind.
- gland - white Cliffs of Albion.
Eise ~~to~~ ^{discharges} ~~fixed~~ ^{fixed} ~~acid~~
effervesce with acids - & fixed
Air discharged -

2 Gypsums - or plaster of
Paris - and -

3 flinty - no stones - up
to precious stones - jewels
one worth 100000 in the
crown in $\frac{1}{2}$ tower. One their
variety of color to metallic

Matter - white ones - paste
lucids. ^{mixture} melt w: Alkalies &
^{the} produce glass.

~~Diff~~ Earths of fire will not
act on - as joint glass - &

Substances - called Salimander
stone - spun ^{the} w: cotton - ^{resist fire} Egypt.
Especially ^{white} ^{byron} ²
- and many y dead in ⁱⁿ glass.

garments made of y: Dr
Columbin's Story

5 Clays. - Variety of color
to metallic matter. Fire makes
them white - ^{altern} what? Exp?
Decompose it by alkali - mixture
all Earths - ^{diff} among
of them ^{with that} - ^{blind} -
owing to the deluge -

8
Sect. 5th
on Inflammables
1 Jewel of all kinds - as Sea

Kanal coal in particular
or fossil coal - charcoal - ~~hard~~
heat - or ^{the} top of - abounds wth ~~oil~~
^{roots of vegetables}
containing Δ - wood.

2 Oils - aromatic & unctuous -
Sp^t. of Turpentine & animal
& veget. - Butter - Sweet oil -
former - fat - Bears grease &c

Heat makes ^{in range} ~~in range~~ ^{in all} ~~in all~~
3 Δ equal parts of Δ & Δ ^{in all}
^{metals -} catches fire there - water breaks
in - Steam & fixed air cause of
earthquakes ^{also unites wth it -}

4 Sp^t of Wine - composed of Δ - aut.
acid & fine oil - Other made
of ~~oil & acid~~ Δ & Δ - is a fine
Oil - Exp^t. - mill dams.

5 Resins & amber. - Δ
^{disappears in} ~~varnishes~~

6 Phosphorus - and Δ -
mition - light wood - fire fly
Dean - Anti¹⁴ Dr Boerhaave's
Story. -

We whose names are hereunto an-
nected agree to pay to the Treasurer of
the Humane Society an annual con-
tribution of one dollar towards sup-
porting the benevolent designs of
said Institution. -

Lect: 6 - Octob^r 23rd

on metals

Divided into metals - and
ferrimetals - 1st malleable
as lead - 2nd not as γ .

- Metals contain ~~calx~~ Δ -
the extraction of it by fire
or acids makes γ Δ -
called Calcination. The resto-
-ration of it called reduction.

E.g. in lead - grease restores
it. why that wonderful γ
our bodies sh^d be raised at
the last day. The soul like
~~as~~ as it were its Δ - when

separated by death - the body
becomes like a calf of metal -
falls into a powder - but by
~~the~~ its reunion of the soul it again
assumes its ancient form.

Gold.

The heaviest of all metals - the
purest - least liable to be
affected by fire - air &c - hence
most useful for coin. ancient
& universal. 2 for buttons -
the watches & a very durable
persons most careful of y:
3 for gilding - capable of exten-
sion in wire & leaf almost

beyond conception. precious
furniture. loses its color
in the light Dark - Light the
cause of color in plants - The
color of gold delightful to the
eye - next to green - w: the
grandeur of ^{the} city of new
Jerusalem ~~in~~ where walls
are to be 1500 miles high, &
all of pure gold. ^{discovered in Ag. Regia -} found in
all parts of the world. Brazil
silver

next to gold in all its proper-
ties & uses. hereafter in
plate. found in Mexico
& Spanish dominions.

Twenty million of dollars
made here annually.

The Spaniards say - hence
of money drawn from them
to all parts of the world. disposed
in O: making of Cannon - when
diluted it is ^{iron}
by being black -
most useful - most destructive

- ~~First used for making weapons~~
~~of death~~. Implements of husbandry
- dry from it - Artificers tools of
all kinds. - Surgeons instruments.

- Creating very useful - He a
great blessing to the world. I wish
I ^{was not forced to} ^{early}
~~would add~~ - employed in
war, & in making instruments
of death - ^{this not always the}
~~But let us~~ ^{we} look
^{by the glass}
now to the time when swords

Shall be turned into plough
shares, & be used in plowing
fields, & nations learn war
no more. - ~~find all~~

Iron melted by heat - in
casting pots - the heat immense.
Story of Cannon Iron works in
Scotland. - ^{all} acids act on it
green & itriol - what - ? water
acts on it - & corrodes it - rust
what? - I hint of steel. I.G:
Astringent vegetables - & from
dark color -

Found every where - diffused
in animals & vegetables - even
in honey. -

Copper

all acids act on it
Heat melts it - D7 Blue Vitriol
or blue stone - a corrosive
alkalies too Sp Sal ammon.
on a solution of it - beautiful
veg: ind - Veg: Indigo - orange
blue - Copper & Zinc - Brass
on phos it white
Ringing bells & church bells - Bells
- escapes & you escapes - common
Copper thin. added

Easily melted & calcined.

All acids, especially vegetable
act on it - ^{becomes sweet} Sugar of lead - white
Printing types - D7 & Z
Lead Acetate & lead. printer
made of lead & Zinc.

Cup plates iron - in solut
of D7 - not acted on by veg: acids. used

admixture D7 & Z. white
Vitriol - found in Calamint.

4

Dissolves in all acids - in
Ox Calomel. -

not in Water - no Vermifuge
mixed wth linseed oil - makes
looking glasses. - gives
brass - unites wth soft and O
- takes off gold rings. -

Actth

on Waters

one simple water - all
different from foreign matters.
Best visible - or invisible.

~~The purest water - rain~~

- 1 pollen - red sand - 3 red
animals as in South Sea - 4
green - from Vegetables - and

foul air from stagnating water -
good out of evil -

Invisible - Salts - common
Salt detected by lunar caustic.

Earths - calcareous

metals - chiefly iron -

known by astringent vegetable,

eg:

fixed Air - Pyrmont water -

~~Lightest Air~~
~~Lightest Air~~ Rain - snow - purest
water - next river - next
well - known by soluble - Hydro-
sulfuric - known by - large
statue of water -

stagnating dissolves foreign
matters - pure water of

New Jerusalem - clear as
crystal proceeding out the

will contribute to health
pleasure -

Airs

1 Common - 1 gallon in 1
minute - 15 pounds on a square
inch ^{Above} - 30,000 of a middle fired man
how exist? - internal air resists
it 50 miles high - Hygum? Oceanic?
Barom? weight or pure

2 Deplagisticated air - $\frac{1}{4}$ $\frac{1}{5}$
of common air - abounds
in is secreted from vegetables.
abounds in
- ~~in the air~~ - stored
lead - 2 to in salt petre - long

is the cause of red color in red
lead or wafers - imparts red
color to flames - & do to the
blood. The more of this air
^{Animals live} if purer - 5 times as long in
it as in common - hence the
refrigeration[†] of vegetables near a
house - is exhalating - see
Milton ^{Aspidochelone air - pure} - The new heavens
no fogs - exhalations - pure integrity -
means new atmosphere -
probably all ^{Dep^d air} ~~Dep^d air~~
often called so - It will contribute
like if pure ~~air~~ water, to health
& pleasure of the inhabitants
of the new Jerusalem.

3 Inflammable Air 89

Ballons - fire damaged -

catch ^{the} w. base not w. ^{the} ~~mouth~~ -

mines in Cornwall - Wheel -

of Gunpowder & reverse -

Phlogistated

4 Fixed Air - 1st from fire

2 breath of animals - Air

changed w. ^{the} ~~Basis of Gunpowder~~
~~& *phlog. fulminans*~~

5 fixed Air - from marble

4 1781. wine cellars - candle &

grotto del cane near Naples.

Basis of Gunpowder & *phlog.*

of Vegetables -

Light - cause of color - ~~from~~
Variety of color & diffⁿ quan:
-ities of light - from cause of
circulation of saps - turn to
it - grow most towards it -
Indians be . Thorn bush in
a garden loses its thorns -

Lect. 8.

Lect: 8:

Having finished general principles
- we come to application.

Considering how much duty &
necessity conspire to confine a
lady to her room - its conveniences
& great consequence.

1 Direction - South & North -

East & West from Europe esp^y.

Britain - coldest in summer &
Down warmest in winter.

Directions opposite to each other in Italy - warm.

2 Materials - Logs - boards -

Stone - bricks - sand - called in
marble - most wholesome
England Cobs - which best? -

Wood - in this country - absorb

internal moisture - Stone
rust - absorb D^o - hence heavier
when wet - than dry - Bricks
when plastered moisture ² when
not - mud - on cols 2 feet thick
excellent - absorb. the

3 Birds direction - large rooms
- in winter - draught less felt
- in summer less collection of
heat - windows open above
in summer - closed in winter -
- some houses windows not oppo-
site - sh^d be a through fare
- a ventilator - what ²
- warm the increased by ^{thick walls}
distinction ^{pets} I said bags low ceilings

x By night - blanket under y stool - but covering
clay floor - not too close.

Frame of y fire place - projecting - small - Iron benches &
sides - closets at a distance
from fire - or kept open. -

Screens - raising the feet above
the floor - setting high. Ashes
in the hearth. ~~by night - not too close~~
~~low seats - promoted by 2 brick walls~~
- on a double wall - Sheds - trees

from shade & evaporation which
produces cold - ^{Situation - height -} ~~from all round~~

as summer houses & keeping
windows & shutters close while
sun shines on them. 4 a floor

of earth - bricks - or marble -
^{which should be kept open}

5 Sitting near a chimney
- circulation of air from & downwards
6 high ceiling. 6
keeps cool & keeps out
from 5 upwards in summer &
in winter

By night. matted ^{large & single beds were} with a chimney - not windows opening

4 Fire places - small be - stoves
clay - brick - iron -
open - & close - the first called
Franklin & Rittenhouses. -

the 2nd close - various - tempered
for baking - boiling - The larger
the funnel - & less hot - more
heat - Economy - wealth of
German and from them.

5 Smoky Chimneys - disagreeable
inflamm^d of eyes - stain furniture
& Walls - darken ^d complexion.
& lastly hurt the temper.

Heavy - Smoke 'don't' ascend
by its weight - is driven up
by raref. Air - what?

London Smoke - Re. form of
funnel. nothing to do wth drawing
- no drawing - smoke driven up
by surround^g air. th

Let: 9.

1 Too tight room - no current
of air - common in new houses
small as well as great rooms
- cured by letting in air above
- a ventilator or louver is best.

2 Too large ^{or funnel} fire place - ^{rare} air
does not fill ^{up} whole of them -
hence they fall - upper rooms
small - lower ones larger.

contract fire place by one course

3 Short funnel & ^{contract} ~~open~~ it

4 Two chimneys attracting

from each other - ^{Avoid} ~~avoid~~ them.

5 tops of houses on a hill
- a turncap covering above &
on 3 sides - & raising ^{off} chimney

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B
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Smoke from above. -

a sliding & sweeping chimney's
glazing w/ salt - extinction of fire
appearing it at night ^{with salt} -
Valley - always clear & sunny.

have - prefer to keep things from
heat & cold & ^{the} cellars w chimneys

keeps virtuals from swamping
by promoting circulation of
the

wood preserved by drying, &c

then painting - direction in which
wood has grown - knots - barring of
of beams or covering them with
resin - before they are put into a
house - walls preserved by plastering
weather boarding -

washing - water to washing -
opening windows - Ventilators.
matters especially Propaganda
when put in the - Noises of potatoes in potato
junior near a house - but it is not

some - - ~~convinced~~
Crisp - Doubtless - when offering
I right to do so - then I wish to
insult - ~~then I wish to~~
I know not you are coming but to
ring - as we are in a room in rain
2 excessive patience - prompt cleanliness
beating - standing near

instruments of the fall of man.
tell us if we have forfeited
our right to the earth, & that while

we are in this world, we are
in an enemy's country,
flies & mosquitoes - covering
from rain water
▽ - on a fish prevents ^mg:

- flies besides useful in the
^{three} ways mentioned - afford
food to singing birds - & consume
vicious matter.

would to destroy them on the
principles of war - by molasses
on a board - & gunpowder - by
fly line in water - a poison -
by avoiding ^{fruit} trees near a house

Dark rooms - driving ^m out the
Bugs - & ⁱⁿ ~~the~~ ^{hot} salt water
^{to poisoning the water}
Nets & mice - ~~with~~ Besides
former uses of insects, they

hint to us to repair our
houses found only in old ones.

Destroyed - 1 by traps. 2 Cats - ^{deadest} not
to be fed. - or if ~~human~~ 3 by arsenic
or ratsbane - wrong - dangerous
to children - & rats when they die
in their holes burst a house.

If humanity revolts as yesterday
at either of these & a Bill, or 5
shaving, or cutting the hair. terrifies
them away. -

Lightning & Thunder & one
~~for~~
when near no perception of
time between ⁱⁿ y. & some of
Electricity ^{plus & quivers - or quills} conducted by
brim. ^{not} Metals. & not by glass.

never if use of iron conductors
draw it silently into y^e earth.

Sharp points best. Sir George
& Dr Franklin's story.

Mr Patton at the College. &
where no rod - avoid being
near a Chimney - Window
or door - middle of room -
avoid trees - see Routes how
they act.

Kitchens - ~~For they are~~ ^{To they are} ~~not of light~~
- captacles of dirt & w^h is worst
Vice. To prevent both Anthony
Benzeret's proposition - In
large families - & in the present
state of civilized society im-

possible. ~~It is~~ ^{out} ~~be caught~~ of
light & dirt - out of sight
- of vice - out of hearing -
under ground - ^{best in flower} - under par:
- lawn - bushes - or straw pre:
vents passage of sound. - It
is ^{or bad in another} acceptable of dirt & vice - but
we keep children out of them.
~~But~~ they increase both ^{for} - vice
in a particular manner
is knowledge is increased by
being propagated. But if ^{is} ~~it~~
there no way of prevent this
dirt or vice - ^{to our poverty & is} are our laws
to all abandoned to destruc:
tion & ruin? no - ~~the~~ our int:
to use the words of L^d Chester.

we are unfortunate friends
or the words of our Saviour -
our "brethren". There is one
& but one method of prevent-
ing the Disorders of a Kitchen
the presence of a Mistress.

Master's Eye - Best of friends
but - the ~~eyes~~^{eyes - ears &} tongue of a Mistress
in her Kitchen a remedy for
all disorders - I visit it two
or three times a day - it is in-
conceivable to a woman

lives by it - & after all - a
man loves a woman most
whose affection for himself he
feels every time he sets down

to a meal, or puts his
hand in his pocket. not
incompatible wth rational
duties of life - tends to ^{defend} ~~make~~
liberal & extensive knowledge
from censure. Solomon's wife
husband no need of spoil, why a best
way of acquiring confidence & justice over
debts he have over -
husband.

Attentive brick heath - hump-
with horse over it. wash
off horse - ^{down} - ^{house} - hay ...

^{woollen}
Dress preserved by tobacco
Cedar shavings - Alopecia -
Camphor - Celler in a chest.
Camphor &c. also by wrapping between
linen. Guard by chalk & hot iron. and
~~by turpentine~~ by turpentine - how?
Hogst farms by Iron mauls - 07 June
the best steam.

Ink-dyeing - ^{the}
Rest: 10

~~Wares - accommodated to~~
~~fashion~~ - wools & cotton
most healthy - dinner less so -
more apt when old to become
faded in the exhalation from
the skin. Silk - when ~~the~~ ^{the} wears
- may in the use of it - durable - all
China clad in it - when old &
worn - may be carded & worn
over again. Woolly - iron - abt.
changing linen. -
Plate - durable - insoluble -
fungal - plated ware on iron -
tin - or copper - may be suited
to fashion.

Copper - & brass vessels acted
on by acids - Symples - Alkalies:
Access of air necessary - bottom

Leptouched - Tin safest - has
arsenic - powder of tin & Zinc
safe - mugs & plates - Economy
in the latter saves knives - and
cloaths - tho' old fashioned. -

Iron safe - du-able - tho' acids
& even water act on it - no
injury from it - handles best
except plate - pots best -

of China - is composed of -
Enamel - safe

Glass - is made of - white glass
of lead - Curves in ~~what~~ wine
glass how made - safe no
solvent in chemistry act on
it.

Earthen Ware - Bone. Green's

Delf - to smelt iron ore - glazed
by ~~lead~~ calx of lead diffused in
water & melted - vitrifies ^a clay.

- Dangerous for acids - dissolve
lead. -

Looking glasses - tin foil &c.

Q - Retorts - Arayons - Oils -
of Linseed - wood & glass - metal -
prints the colours - engraving
& clothing -

Breasts - Master of Francis
Curent - & cast - Baparelino,
& Alto relievo. -

Beds - Shuts - sh^d be well
aired - daily to discharge
respiration - is filled wth
purified air & g. a candle.

washing - to give delicate colors

Bleaching - Sun - & Alkali or
potash -

Ironing - smooth - caution
not to put hands in cold &.

Soap - oil - or fat & alkali
brown ashes - hardened by
salt - how - Venice - Castile
of Olive oil & good alkali: cold by
heat -

Starch - of wheat & potatoes -
^{2 mths} fermented -
~~washed~~ & strained & washed -

Blue - to prevent yellow -

Dyes - 1 beautiful - like the
works of nature - preserves
many things - like paint.

Colors - what? Vandyke.

brown - Different brown

Vegetables - metallic and
earthy salts -

Clocks - & Sacks - Boxes of
much^t flowers - I increase the
powers of man, & lighten labor.
- move by weights & springs -
or smoke -

Lamps - new fashioned lamps
smoke - candles - Illuminati
- tallow - Buns & myrtle Wax.
^{to be}
Cotton Wicks & kind best.

Pens - boiling quills in ashes.
consumes this Oil.

Ink - black - how made -
^{figs} - & Cloves -
pigments - used in China - not
so good as ink -

Sympathetic - the Sat: and
disposition disposed in harmonization
or harmonization.

Super - from 2 ago -
Bois - printing office.

Therapeutic Barometer. See y:
necropoly in a house. See y:
the latter predict changes in
the weather.

Means of present Beauty
Depend on teeth - &

Beauty - Shape - Complexion
- & teeth. Line of beauty w: ?
Shape promoted
By loose dress - erect pos:

Form of body & head - as to
teeth - not close or separate & drawn down ones
& complexion - as to teeth ones
by unfolding - right ones -
one ones - 2 ones - as to

Britain & Ireland - ditto here
frequent washing the face
& hands, esp^y in rain or
snow water Job. "If I wash
myself with snow water & make
~~myself~~ my hands never so clean"

3 good health. depend^g on
moderate exercise ^{walking} & early
country air. air of hills & Scotch
rising & avoiding late parties.
Ladies -

- 4 moderate animal food not
too high seasoned 5 light perfume
on y^e head of dress. above all avoid
5 cosmetics - injure health &

give a yellow color - made of
glysters - perfumes - substances
for cleanings - ~~best~~ - no smell best
6 innocence - purity of mind

If knowledge - ignorance has
been called y^e curse of God - gives
a vacant eye, & face.

Dr Young

"Beauties of Soul irradiate &c

Lect. 11.th -

of elements

we shall begin by enquiring
into the final cause or seasons
of the frequent returns of appetite.

- Why sh^d so much time be emp-
loyed in this animal gratification?

- Why were we not so formed as
that ^{by} ~~eating~~ ^{plentiful} one ~~heavy~~ meal in
~~our~~ sh^d not be sufficient to
support our bodies for a week - a
month - or even a year? - Two

seasons may probably be given
~~for~~ why this is not the case,
& why we are so dependant
upon the elements that support

our bodies, as to require two
or three meals a day to support
them.

It is essential to our happi-
ness that we sh^d. retain a con-
stant sense of our creator
upon our minds. ~~Therefore~~
~~we~~ To preserve this sense
at all times, our maker has
kindly ~~rendered us~~ ^{rendered us} ~~dependent~~ dependant
upon his bounty, & has, by
the regular & daily returns
of our Appetites, implanted
a monitor in our bodies to
prevent our forgetting him,
& to remind us of the

Obligations of gratitude, and
obedience which we owe to
his goodness. - The language,
then ⁱⁿ ~~of~~ every meal we set
down is, - "When this you
see" - Remember me"

2 A second use in ^{the} frequent
return of our appetites is,
they serve to promote conver-
sation ~~by~~ & thereby to increase
knowledge & social happiness,
by bringing the members of
a family - friends - and
even strangers ^{more frequently} together for
the ^{reciprocal} purposes of eating, and
drinking.

I cannot help remembering
a further instance of the divine
goodness in connecting so much
pleasure th in the employments
of eating & drinking. Had this
^{gratification}
~~been~~ been left to reason,
~~to~~ or to instruction, how
often w^d pleasure - business
or indolence have rendered us
dead to the necessities of our
bodies - and how often would
a perverse temper in a child
have been the cause of its
death - for if ^{this} ^{was} ~~a~~ child ^{to eat} ~~th~~
not ~~be~~ impelled by the
pleasure it derived from
eating, it would be end

difficult to compel it to
eat, as it is to make it learn
its book. —

There is the same ~~connection~~ ^{relation}
between different elements of
there is between diff^t notes in
music, — ~~as~~ ^{the} perfection
of Cookery consists in finding
~~these~~ out these relations. —

I am disposed to believe the
^{of cooking} science is still in its infancy,
& will remain so till it is
rescued from the hands of ^{practical} cooks,
& made the subject of philo-
sophical experiments, and
investigation. I believe there
are pleasures to be enjoyed

in eating, ~~that we are as yet~~
~~strangers to~~ - and that there
are degrees of health, & long
life to be derived from the pro-
per & harmonious mixture
of aliments, that we are
as yet strangers to. Perhaps
discoveries upon this subject
may be reserved for some of
the female philosophers of
this new world.

I shall briefly explain w.
I mean by ^{the} harmony of Alim.
by a few examples. -

~~Fish & fowl - that is to say~~
~~able to~~ Bread & meat -
are related - & form a harmony
when mixed together.

Bread & milk - Bread, and
Butter - Meat & salt - Salted
& fresh meat - Mustard &
cold beef - Cabbage & Vinegar -
Mutton & turneps -
Venison & Currant jelly -
Pork & apple sauce -
are ~~are~~ alike related to each
other, & are alike grateful
to the taste & ^{alike} healthy when
taken into the Stomach.

Let us next mention a
few instances of ^{the} want of
harmony, or discord in Ali-
ments. -

Fish & flesh when mixed
together - Bread & pudding -
Sage & salt - and hysar -
meat & sweet sauce - Butter

Union - Bread & Onion - milk
& fish -
are all contrary to each
other, and disagreeable to
the taste, & if they do not
offend the stomach, it is owing
to its peculiar strength & health-
ful state. -

The same observations
apply to Drinks. - There is the
same harmony & discord in
them when properly, or im-
properly mixed together.

I shall add one or two remarks
to this subject
1. The taste when pure is
an infallible mark of wit-
h healthy in Aliment. It is true
the stomach often receives

with ^{out} rebelling aliments that
are not grateful to the taste -
But this is owing to its peculiar
Strength. The taste & the stomach
are naturally in Union with
each other - and tho' the stomach
may forbear long, yet it sooner
on later accords th the decisions
of taste: E.g: Fish & flesh are
unpleasant when mixed together
in the mouth - But they may
may be taken in receptions,
th in impunity - This is owing
to the stomach not ^{giving} ~~yet~~ an
Alarm ^{like the taste} upon the first violence
being offered to it - But attend
to the consequences of persons

Who have long mixed fish &
flesh together in their stomachs
- They cannot digest them
hence we find - when they
eat fish - they prefer eating
nothing after it. -

2 - How shall we account
for so many old people
in high life in all countries?
- we read of noblemen of 70-80
& even 90 years of age who have
feared sumptuously every
day, and yet feel no incon-
venience from it? - Jas:
- credit their health & long
life entirely to their living

upon the best of food - mixed
in a manner ^{form} so as to be in
perfect harmony ^{upon the faste & in} & accords
the stomach. ~~very digestion~~ It is this agree-
-able & harmonious mixture
of Aliments that enables some
persons to eat such large & ^{frequent}
~~agreeable~~ meals without much
or any inconvenience, & it is
the want of this ^{or proper mixing} harmony I
suppose that makes even the
most wholesome Aliments,
taken in the most moderate
quantities produce diseases
& ~~death~~ in many people.
- The Germans in this State
are much afflicted with
Stomach Complaints, owing to

These Aliments not being in
Quantity
Quantity - or mixture propor-
- tioned to their constant Ca-
- bor 3 useful in vegetables - blunts
the appetite for excess of meat.
of fermentation.

An intestine motion between
dissimilar bodies, or dissimilar
elements. all animal &
vegetable bodies undergo it.
Three Stages - Wine Vinegar
- Vinous - Acetous.
of putrefaction. -

For fermentation the
following circumstances necessary
1 heat of 80 to 100 degrees
beyond too rapid. -
2 moisture - Sugar never
ferments. -

3 Air - accers necessary

4 Heat, & in some cases ferment.

We shall
~~off~~ apply these principles
as we go along. ^{every animal used in diet.} ^{Animal food}
proper & common ^{is} aided by God & ^{is} ^{from} ^{proper} ^{to} ^{be} ^{the} ³ ^{is} ^{not} ^{who} ^{some} ^{meat} ^{is} ^{vegetables}.
meats - wild - most easy of

digestion - heated by exercise - exp^d
chase - sooner ~~digests~~ ^{from} ^{if} ^{food} ^{they} ^{contain} ^{to} ^{perfection} - hence don't
bear long keeping - ^{Inhuman practices} Bull bear-
ing - & throwing at each other
substitutes for wild flesh. Legs of
quadrupeds - & wings of ^{wild} birds
from being most used ^{part}
of digestion. -

Domestic - flesh white - less
savory - grain is ⁱⁿ ^{gravel}
confinement helps to ^{be} ^{fatter} ^{than}
necessary - bear keeping - are
tendered by it - more so if

killed by electricity - legs less
easy of digestion than wings -
because more used - Ducks
geese & pigs best eaten soon - oil
Young animals - proper in
strong stomachs - abound w:
mucilage - ^{fully grown} ~~easy~~ easy of digestion
+ Sanctonius's fast almost perished?
Beef & Mutton easier ^{than} ~~than~~
best at 15 by yeast - Wales & Scott.
veal or lamb - Why? Mad.
Dianconville taught me - the
first from greater strength of
teeth - stomach the more ani-
malized - veg. matter still
present in veal & lamb. -
first diet of savages - ~~strong~~ -
fish - The bones, Rat after
it comes out of the water the
butter - practice in Holland &
solid food, requires good
health to bear it. Pepper &
vinegar - soy - necessary w

it. Hence the Africans all
fond of high seasoning with
it. Roast three times. -
practice it in Scotland & drain
+ It floats when boiled and
sinks when boiled too much.

Oysters - abound ^{the} in nourishment.
when best - roasts's fiction ⁱⁿ a y;
best raw - or only heated &
roasted in a pot. - Claims
best in soup - strong & hard
of digestion. Livison's case.

Boiling
~~Boiling~~ Roasting first invented.

Boiling - roasting - frying -
Stewing - ^{& baking} - By boiling & stewing
we retain the juices of the
meat ^{ch} to are savoury & help
digestion. -

Baking & frying - hardest & burns ^{oil}
^{rancid.} -
Boiling most simple - and
if ^{beers or juice} used with
easy of digestion - raw - or
it which ^{disposes it} -
well done ^{best} ^{general} food? -
the last - modern ^{best} ^{by}
more easiest of digestion.

Soups & Broths - very im-
portant articles in housekeeping.
- "Take up ^{of} fragments that
nothing may be lost" said our
Saviour to his disciples. By
making soups we comply
^{the} with this injunction. The fol-
lowing circumstances concur to
recommend them: 1. Economy.
^{required}
Left meat & fragments on
crusts of bread may by these
means be saved from loss.

2 health - 3 a lively state
of ^e mental powers - Sparta
Scotland

Soups various - French
their soup gras & maigre - the
one wth & the other wth out meat -

- Scotch - Barley broth & Hodge
podge - all composed of meat
& vegetables of diff^r kinds, and
in diff^r proportions - sh^d be
eaten before meat - afford much
nourish^{mt} & prevent excess by
blunting ^e appetite.

Improper in fevers - Pres^{er}vation of fish^e flesh
1 by salt - 2nd by Sun-dry^{ing} -
- ling moisture - Indians
sailors - 3 frost & hardening

in houses - wells & faults
moisture - Canada - 4 by sugar
& molasses 5 Exclusion of Air
- sand - flour - 6 spoke =

7 boiling - a peacock - extracts juice
of roots - makes it more
exams - running - curious

fact of small & large quanti-
ty of salt on meat explained.

Dec 12th
Condiments - what 2

Salt - useful - helps digestion -
Indians use ashes -

Vinegar - ditto - has some
saccharine matter w^h makes
it nourishing. - pickels -
Vinegar in solid form.

Pepper - ditto - in warm
climates & by old people.

of milk -

Diffe kinds - a bounds th Sugar
^{goats}
Cows milk

Reserved 1 By a cool Celler
2 boiling it 3 depending it from
the under by weights - iron -
the conception of the air
only - as the horn be burning
prove.

¹²
cured milk - yields cream
coagulation or cheese &
2 Butter - & 3 whey.

The 1st is of a Veg: Nature
2 animal - hence milk

Veg: & animal.

^{cream first squier}
Butter made by fermentth
of Cream - short time in

cool place -
collecting it - Cleanliness
hot water to clean be -
Butter milk - consisting of
Whey - &c - &c

Curd - Cheese - made by
1 Rennet - what - 2 Wine.
3 Vinegar. 4 molasses. 5 for
flower of Antichoke - 6 fish.
hence disagreement in stomach.

Rennet best - no taste -

Cheese - old best - Salt - col.
^{a substance called}
by Annatto. &c

Whey - Sweet & wholesome

Eggs how preserved by
oil - how known to be
sound by the tongue. -

ch
w part animal ^{most} & for
easy of digestion - Madame
Darcourville. It is not to eat
hard. -
Vegetables

By boiling - well boiled best
except Cabbage - ^{light} ~~pot~~ like
fish when boiled in - ~~pot~~ -
toes kept from bursting by
pouring cold water on the
water that boils. ^{preserved by} -

^{fruits} Preserved - 1 by drying as
cherries - & 2 by baking
as peaches 3 by sugar - 4
by excluding air - as Grapes.

Herbs - by drying in the
Shade. —

of hagar - from Sugar cane
sugar tree - ^{Leaf - how made -} But cannot be
1 nourish^t 2 oil 3 mucilage

of Oils - Salt - & washing -
wholesome - used by Ancient
& Eastern Nations - Butter
when fresh - mucilage makes it
mix easier &c

of Water - excellent drink. Dr
Hottungill's opinion of it
Mead - clear & unclar?
Sarah's angels wth ^{the} ^{the} first -

first dinner by a frugal woman
leaved with sour doe of
last baking 2 yeast wheat?
how preserved - 4 Symmont
water & fermented sugar &
water. Bread preserved by
twice baking - universal
food - wholesome - corrects
animal food - & prepares out saliva
in chewing. - Known from:

Wine - acid - Spirit - Sugar
& ∇ - nourishing in propor-
- tion to sugar - White - Sweet
& red. - keeps best in proportion
to spirit - Vaults for red -
no weather medicine - or
Sherry - best for over

Chinote - ~~was~~ Lead used
to sweeten red ~~white~~ wines
- detected by solution of
Opium in lime water.

finer - by ^{Alum} brick - ^{King of} Eggs - sand &
white paper - how do they act.

Cyder - ~~pressed~~ rashed often -
or strained thro' sand & tol -
separates mucilage - Pomona
wine - how made -

Beer - from all grains -
Barley best - nourishing -
meat & drink - Porter best
all Vinous fermentations
Vinegar - from sour wines
- cyder - Beer - mother -
& wine Steins - or of -

quithand by a black bottle.

Spirits - distilled liquors
in various state of fermentation.

Brandy from wine - Rum
Whisky - peach & apple do.

Liquors cooled - 1 by eva-
poration - Solutions of salts
not by rivers or sea - same
temperature as air - Inulin
log book -

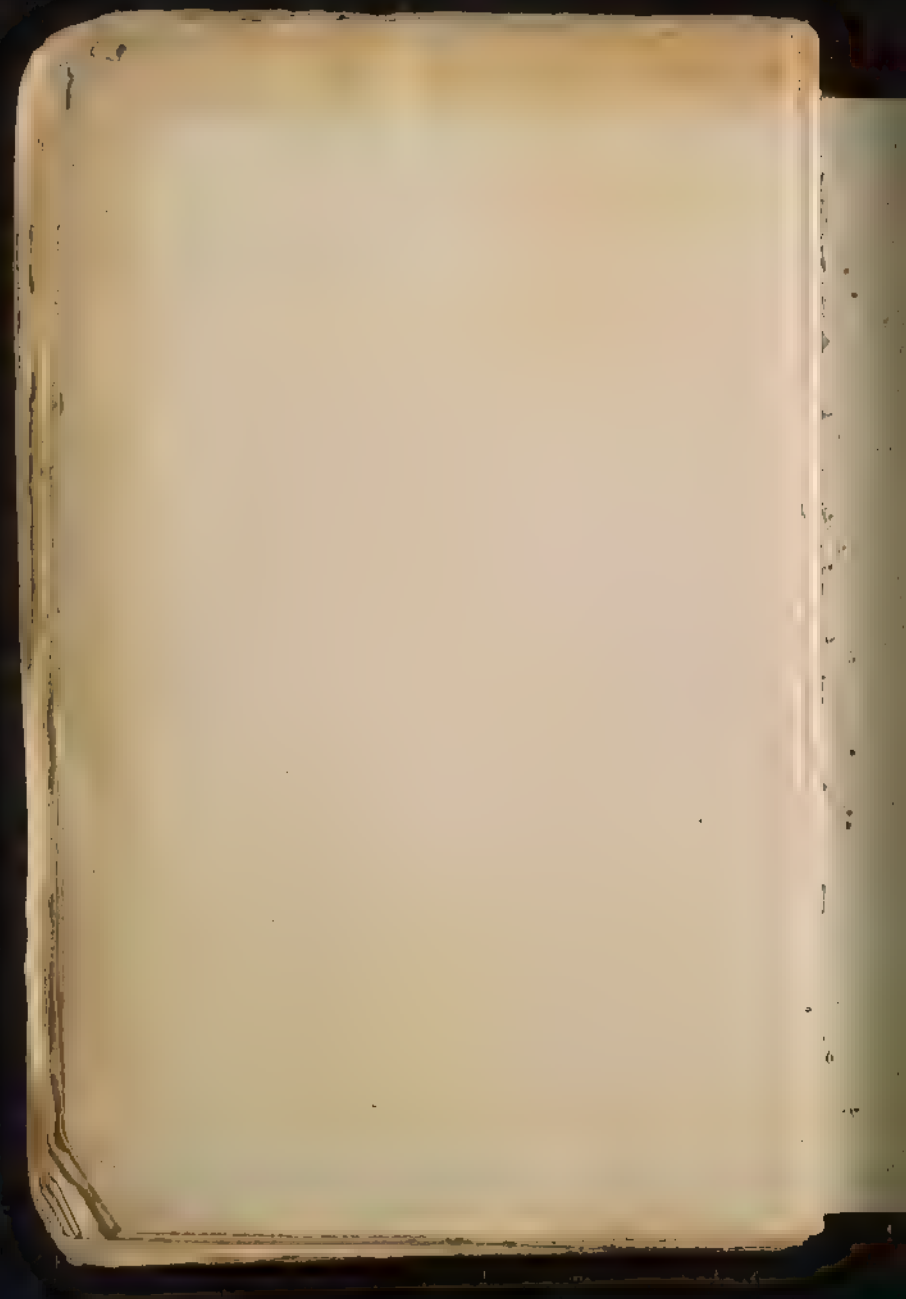
Tea - same shrub - the
fragrant taste from herle
Opium - ^{shd be taken in water} -
Herbs -
Flaxseed - & Bran common

I have given you a few
hints which will enable
you to pursue your inquiries
upon these subjects with
ease & pleasure. ~~As~~ From
the improvements you have
already made, it I flatter
myself you will become
philosophical as well as
practical housekeepers,
and that you will be able
to ~~derive~~ derive instruction
as well as pleasure hereafter
from the ordinary duties

of domestic life. Accept
of my thanks for the polite
attention with which
you have been pleased to
honour these lectures, &
of my best wishes for
your future happiness,
& prosperity.
~~in all the~~

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—
L
S. J. J. J.

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H E A R, ye children, the instruction of a father: and attend to know understanding.
Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get under-
standing.—Psalm 112. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.

If sinners entice thee, consent thou not.—Psalm 119. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.

To write a free and legible hand, and to understand common arithmetic, are indispensable
requirements.—Miss CHARLOTTE's Letters.

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a
good education is not that they should become dancers, singers, players, or painters: its
real object is, to make them good daughters, good wives, good mistresses, good members
of society, and good christians.—Miss MOWE'S Essays.

Your endeavours are deficient, it is in vain that you have tutors, books, and all the external
aids of literary pursuits. You must love learning, if you intend to possess it. In
order to love it, you must feel its delights: in order to feel its delights, you must apply
to it, however inconsiderable at first, steadily, constantly, and for a considerable time.
Pleasures, indeed, are all the paths which lead to polite and elegant literature. Yours, then,
is surely a very peculiarly happy.—Value daily the opportunities you enjoy, and which
are denied to thousands of your fellow creatures.
Without exemplary diligence, you will make but a contemptible proficiency. You may pass
through the forms of school—but you will bring nothing away from them of real value.
—Your instructor may, indeed, confine you within the walls of a school, a certain number
of hours, and may place books before you, and compel you to fix your eyes upon them;
but no authority can chain down your mind.

That learning belongs not to the female character, and that the female mind is incapable of a
degree of improvement equal to that of the other sex, are narrow and unphilosophical
prejudices. The present times exhibit the most honourable instances of female learning and
genius. The superior advantages, boys' education, see, perhaps, the sole reason of their
subsequent superiority. Learning is equally attainable, and, I think, equally valuable,
for the female as for the male.—Knox.

SYLLABUS

OF LECTURES,

CONTAINING THE APPLICATION OF THE PRINCIPLES OF NATURAL PHILOSOPHY, AND CHEMISTRY, TO DOMESTIC AND CULINARY PURPOSES.

COMPOSED FOR THE USE OF THE
YOUNG LADIES' ACADEMY,

IN

P H I L A D E L P H I A.

P H I L A D E L P H I A:

PRINTED FOR ANDREW BROWN, PRINCIPAL OF THE
SAID ACADEMY,
M,DCC,LXXXVII.

2
2

The Application
of the
Principles of Natural Philosophy, ~~and~~
^{and medicine}
Chemistry, to domestic and culinary purposes.

Composed for the use of
The Young Ladies' Academy,
in
Philadelphia:

By Benjamin Rush M.D. and Professor
of Chemistry in the University of Penn-
sylvania —

And:

Read, by him, in a course of Lectures,
to the
Young Ladies of the first class,
in

October 1787. —

INTRODUCTORY remarks, on the effects of heat and mixture, and on the different objects of Chemistry.

Of Salts.

Of Earths.

Of Inflammable Bodies.

Of Metals.

Of Waters.

Of Airs.

& Situation

Of the direction of a house.

Of the usual materials for building houses.

Of the means of rendering a house cool in summer and warm in winter. ⁺

of the means of existing heat &c
Of Fire-places—Stoves—and Fewel. ⁺

Of the causes, and remedies, of smoky chimnies.

Of Cellars, and Vaults. — a garden — stable

⁺
not unhealthy — horse & cow &c

+ Hole a few feet deep in a cellar
excellent. —

— — — — — boy smoking. !

or more
+ two of the Laws of heat.

first. — ⁺ Cold Houses bath (a)

+ Here in flammable

bodies.

*as directions when I have
to use it under means of
preserving a female beauty. —*

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Of the preservation of the wood and walls of a
house.

+ washing - Of rendering clean and wholesome. +
Dagger for Of preventing and destroying such insects and nor-
telling in it ious animals as insect houses.
afterward, Of the means of defending houses from lightning.

ashes put Of Kitchens, Ice-houses, &c.

out fire. *Peire* OF DRESS.
vol. 3. p. 88 Of Woollen, Cotton, Silk, and Linen cloaths. *vol. 2*

mention its

Advantages.

OF FURNITURE.

Of Plate.

Of Iron, Pewter, Tin, Copper, and Brass vessels.

+ 4 & 0

ring. -

Of China, Glass, and Earthen ware.

Of Looking-Glasses, Pictures, Prints, and Busts.

Of Beds, Sheets, and Blankets; and of the means
of preserving them, &c.

to discharging Of Washing, Bleaching, and Ironing.

fixed air Of Soap, Starch, Blue, and Dyes.

from Shells. Of Clocks, and Jacks.

Of Lamps, and Candles. *x Asbestos -*

Of Pens, Ink, and Paper. *matches & phosphorus*

flower oil good.

to use it under means
of preserving female beauty.

Of Books.

Of Thermometers.

Of the Barometer. - *Lebanon*

Of the means of preserving Female Beauty.

of cash & of air as connected
OF ALIMENTS: *the health.*

Of the final cause of the frequent returns of ap-
petite for food.

Of the harmony between the different kinds of
aliments, and its influence upon health and pleasure.

of time of eating. of Sleep
OF FERMENTATION. + fixed air

Of Meats, wild, and domestic, young, and old.

Of Fish.

Of the different methods of cooking animal food.

Of Soups and Broths.

Of the preservation of fish and flesh.

OF CONDIMENTS.

& nitre - making of nitre
+ Of Salt, Vinegar, Pepper, &c.

Of Milk.

Of Cream, Butter, Cheese, and Whey.

Of Eggs. + *x* *preparation by Dr*

+ prevents worms
Sal. P

+ known to be good by, transp.
2 large and warm 3 by sinking.

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October 1787. —

OF VEGETABLES.

Of the means of preparing them for food.

Of the means of preserving them

Beans - Chinese & meth ^{them.} of using ^{p.}

OF FRUITS. & pleasant - ag.

Of the means of preserving them. like & worms.

Of the means of preserving herbs.

Nuts - Chestnuts Low pres.

Of Sugar. & see Williams letter.

Of Oils. - Pease preserved in

Of Water. & mineral &c. Cash's lined with tin foil.

Of Bread.

Of Wine. - Sal & - useful to low

Of Cider. - Roman wine

Of Beer. - Mr Beldnap's recipe.

Of Vinegar.

Of Spirits. - composition & danger

Of the methods of cooling liquors. & recipe from

Of Teas, Coffee, Chocolate, &c. review by

Trifling Disorders in w^h are

not consulted. as wants - ring

Worms - Whitlow - corns -

Sore eyes - Mr Allen's eye

& Calam. ointⁿ water: also

to not diminish female beauty.

Horse & Cow - how to
be treated - a Garden Ser

produces Dyspepsia.

& use in Diet - scale of D^o - triedwith pigs - negroes in w^h India -

Plague not known where used.

- Lament being derived from

lab^r of negroes - might be had

from maple tree - But - fault

refinement of Sugar - use in

preventing Worms.

the effects of cold water

Drink - essay from humane

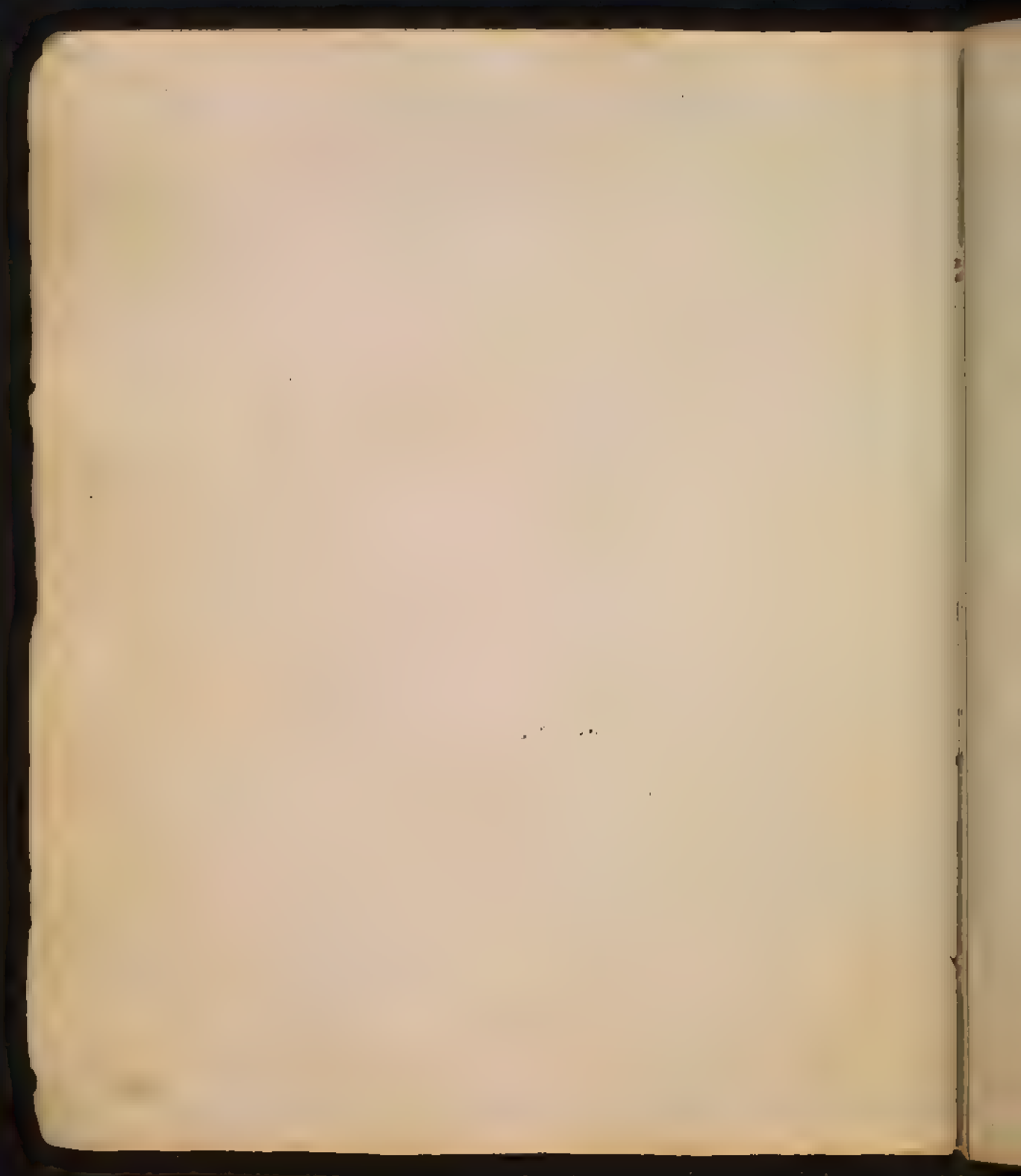
Society: pub^l -

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Introductory address.

Young ladies,

The last time I had the pleasure of addressing some of you, I endeavoured to shew you the folly, and impropriety, of acquiring such accomplishments as were not accommodated to the present state of society, manners, and government, of the United States. — To supply the place of these accomplishments, I beg leave to offer to your attention a few plain, and simple, remarks upon such parts of a Natural Philosophy, and Chemistry, ^{as medicine} as are applicable to domestic, and culinary, purposes. This kind of knowledge will be useful to you in a variety of ways. — 1st. It will excite a taste for such books as treat more fully upon these subjects, and raise you above the necessity of stooping to novels, and romances, for ^{past} entertainment.

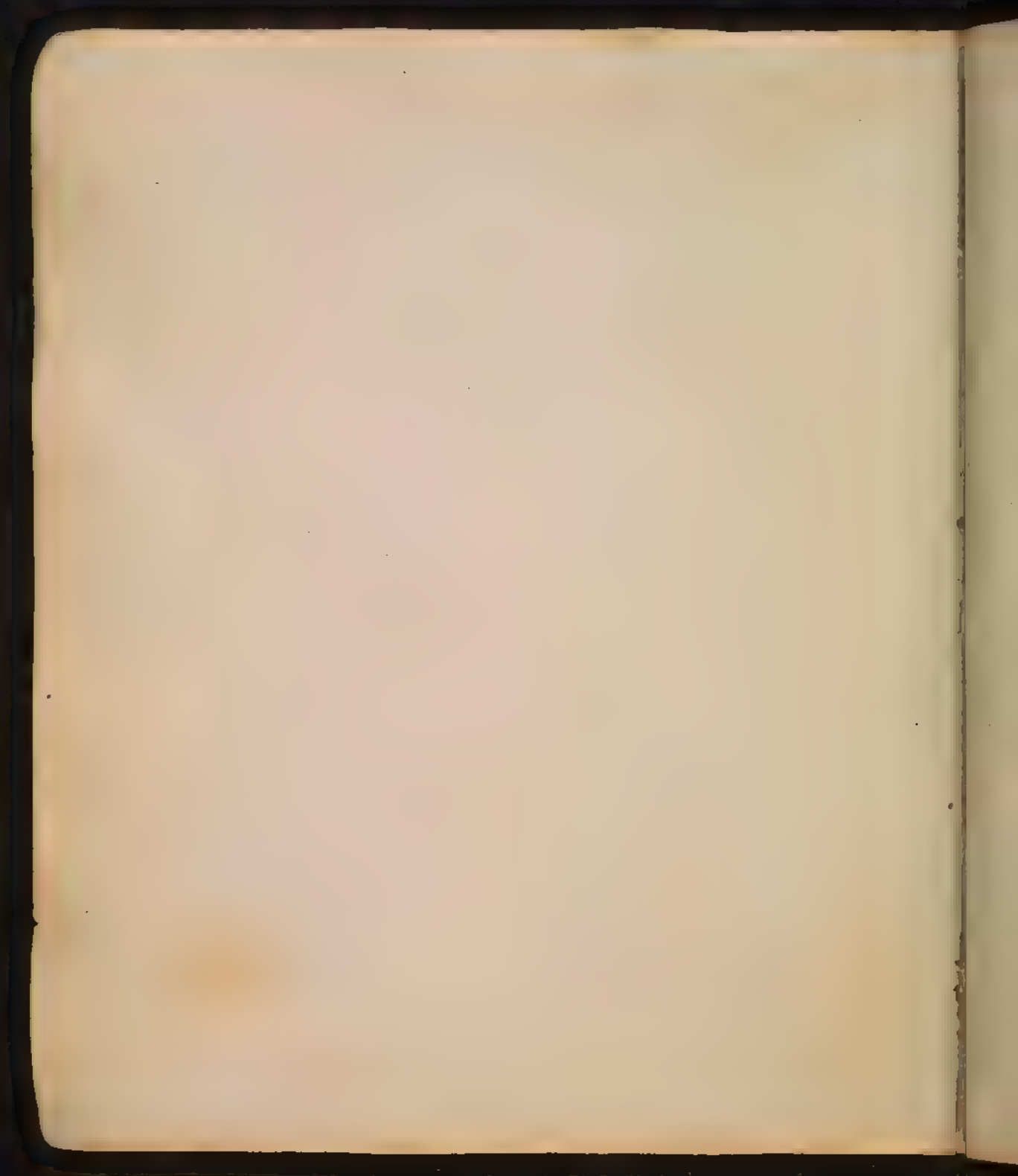
2.^d It will furnish you with subjects for rational and improving conversation, and, thereby, preserve you from dishonouring your understandings, and wasting your time, by deriving all your conversation from dress, fashions, or ~~wanted~~ less innocent subjects. —

3.^d It will cause your society to be sought for, and courted, by sensible men, and be the means of banishing fools, and coxcombs, from your company.

4.th It will afford you pleasure in solitude, and render you independent of public amusements for your happiness.

5.th This kind of knowledge will make you useful to your parents while you remain in subordination to them. And,

6. It will teach you frugality, and economy, and, thereby, qualify you to shine as wives, ^{mothers,} and mistresses, of families, when it shall please God to call you to fill those important, female, stations.



Chemistry

Is that science which teaches the effects of heat, and mixture, for our improvement, in the works of nature and art.

Heat, and mixture, are two powerful and universal agents, in nature, and art. We see them every where.

In nature, these produce rain, earthquakes, meteors &c.

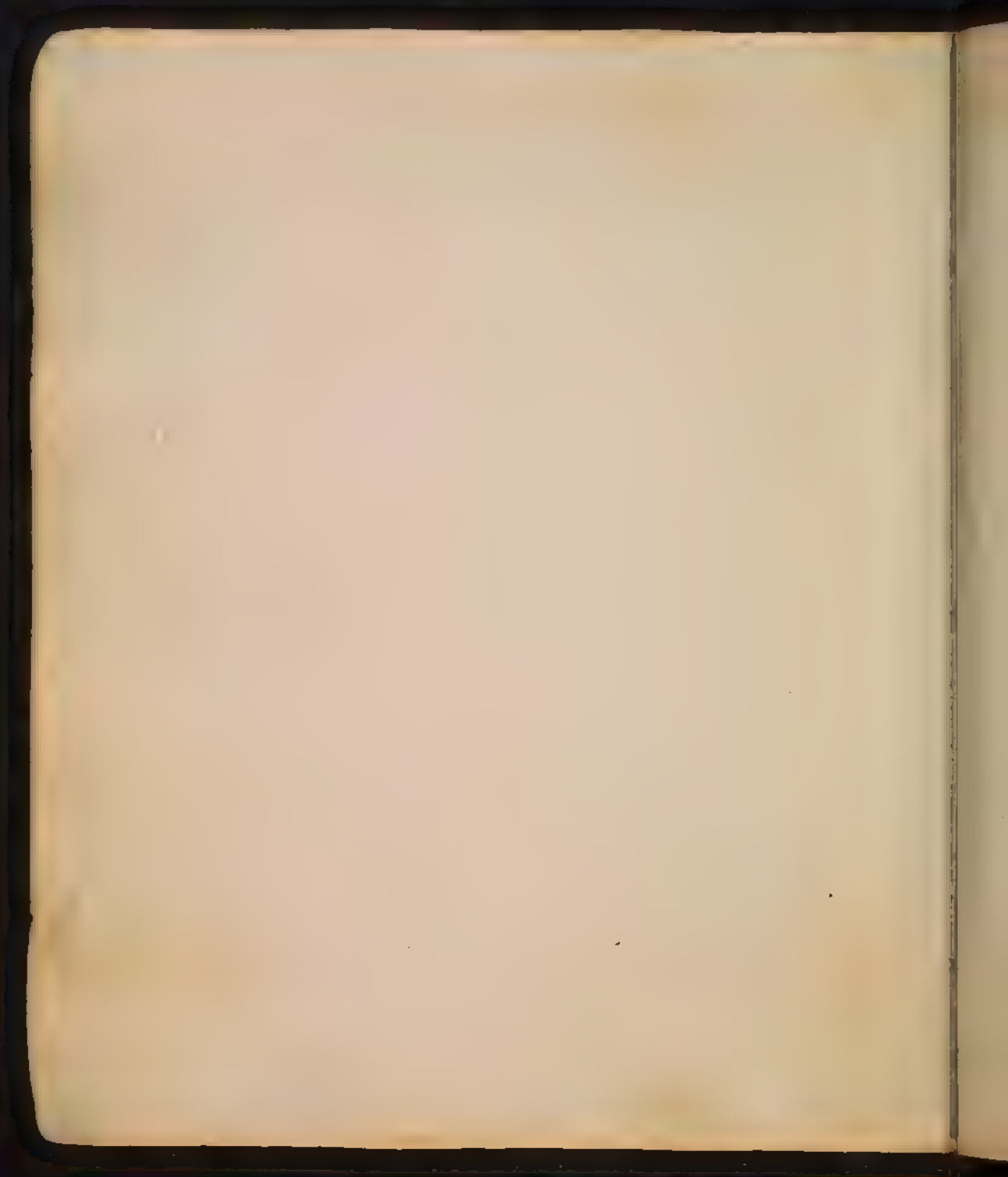
In art — The baker mixes flour, yeast, and water, which, by the application of heat, he makes bread — The brewer from a mixture of malt, hops, and water, with the assistance of heat, is enabled to make beer. — The brass-founder from a mixture of copper and zinc, by the assistance of heat, procures brass, &c.

Of heat.

All heat is originally derived from the sun. It is lodged in all bodies, and is excited,

1st By percussion — as from flint and steel.

2. By friction. There have been flames produced by the rubbing of the wheels of a cart against the axle-tree. The Indians frequently kindle fires by rubbing two sticks together.



3. By fermentation. — Hay, if stacked too green, ferments, and is liable to catch fire.
4. By mixture. — Lime in the hold of a ship, mixing with the sea-water, has set the ship on fire. Nitric acid, mixed with water, produces heat.
5. By access of air, — as in phosphorus.
6. By the rays of the sun, collected in the focus of a burning-glass.
7. By the application of a burning body.

Sources of heat.

1. It passes more slowly through soft, and spongy, bodies than thro' dense bodies — hence woollen cloaths are warmer than silk, or linen, by retaining the heat of the body: upon this principle many of the Germans, in this country, in the winter season, use feather beds for a covering; for these, being much more soft, and spongy, than blankets, are also warmer: — hence down coverlets are so useful — hence snow, by retaining the heat of the earth, is so useful to the farmer in cold coun-

h. a.

countries and promotes verdure early in the spring
may, so effectually does it confine the heat of the
ground, that a rapid vegetation takes place
under it. hence, the Indians ^{have} sometimes lain
down to sleep, in the woods, with a blanket
wrapped round them, and in the morning
have found themselves in a ~~wet~~ sweat, tho' covered
with snow, which had fallen, in the night, while
they slept; the snow having prevented the es-
cape of heat, and also the admission of cold:—
hence, also, that wool, with which providence
has covered sheep, for their defence, in cold coun-
tries, becomes hair, in warm ones.

2. Heat passes slowly thro' white bodies—hence the
use of white hats and clothes in summer—and, hence,
the goodness of Providence in covering the heads of
old people with white hair.

3. Heat, by communication, produces an equilibrium
Hence, islands are warmer than continents, the air
in the former being warmed by the communication
of heat from the surrounding waters; besides, winds
blowing over large tracts of uncultivated land, in the
latter

latter, produce cold— hence it is, that orchards on the banks of lakes, or rivers, are less liable to be injured by frost, in spring, than those which are more remote from them— hence, if a frozen apple be thrown into water, the warmth of the water (for it will be hereafter proved that the coldest water is possessed of heat) will be communicated to the apple, and will gradually thaw ^{it} the frost, and at length produce an equilibrium of heat— hence, also, damp air is so cold in winter, and so disagreeably warm in summer; for, this damp air conducts off the heat of our bodies to the colder air ~~in which we are surrounded~~, in winter, but, imparts to ~~us~~ the heat of the warm air in summer.

11. Heat ascends— this may be illustrated by opening a room door, and holding a candle near the top of it; the blaze of the candle will be forced outwards by the warm air, going out; but, if the candle be held near the bottom, the blaze will be turned inwards, by the cool air, coming in; for air like heat tends to an equilibrium— hence it is that tailors in Germany sit high; and the French sleep in beds raised so high that they



they are under the necessity of ascending to them on
chains &c.

5. Air is heated by reflection only — not the smallest degree of the Sun's heat is imparted to the air in its passage thro' it to the earth; but, this heat is afterwards reflected by the earth, and imparted to the surrounding air; the heat, thus reflected, does not ascend very high; for, on the summits of some high mountains, coldness, and snow, are found throughout the year; and some adventurers, who have lately ascended, in balloons, to a great height, have felt the cold so intense, even in the summer months, that they were ^{obliged} immediately to descend, lest they should be frozen.

Lecture the 2.^d

Effects of heat.

1.st Expansion — heat expands, and cold contracts all bodies, except ice; this may be proved by the air in a bladder which will be rarified, and expand when placed near a fire; or by the ~~mercury~~
mer.

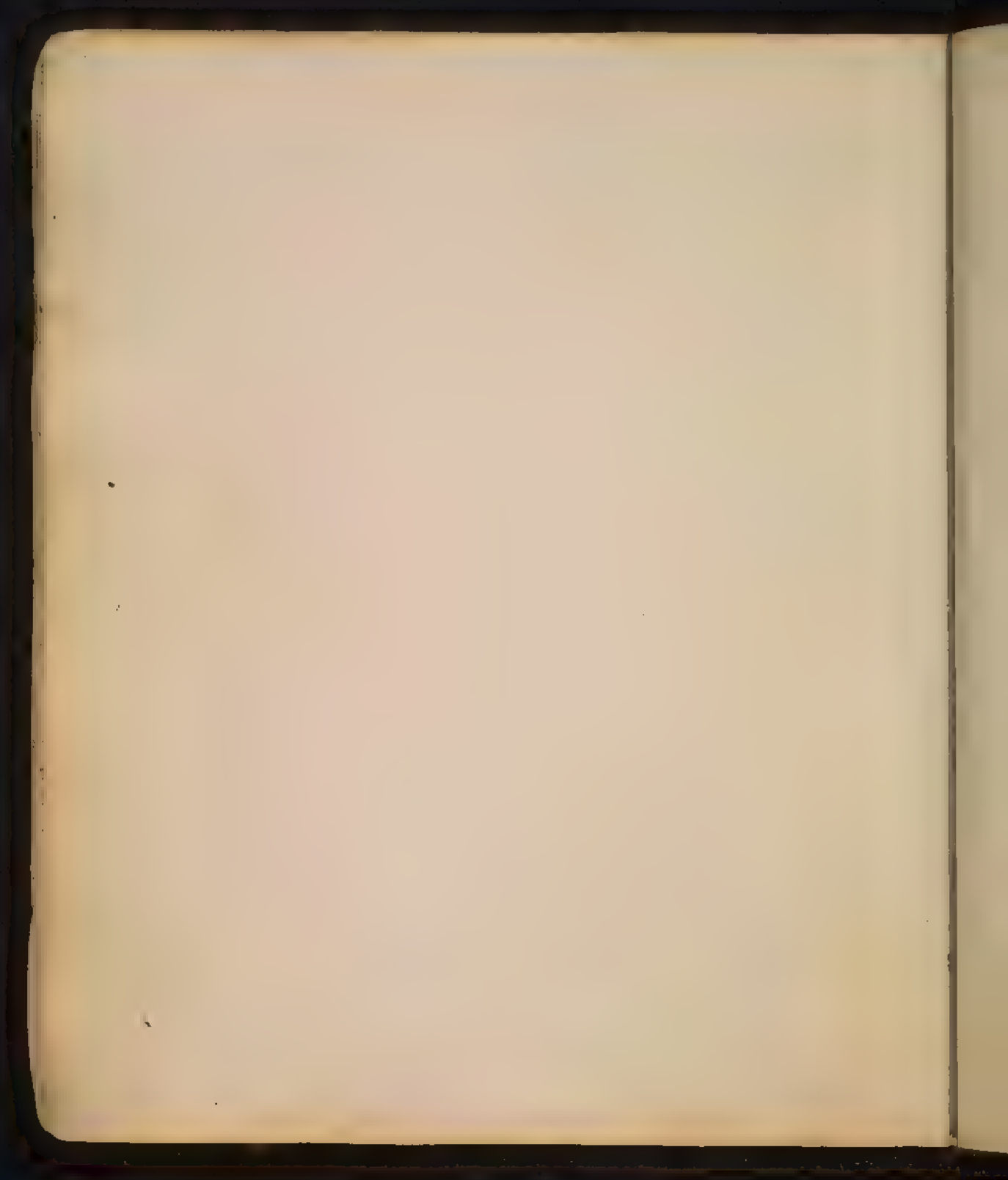
of the

^

mercury in a thermometer which expands, with the heat, in summer, and is contracted, by the cold, in winter — these effects may be produced by placing the thermometer ~~in~~ ⁱⁿ warm, or cold, water — hence, clocks vary, because of the expansion, and contraction, of the brass &c. which compose their works, in warm and in cold weather — Iron bolts are affected by heat & cold, in the same manner —

^{of the earth} The constant action of the sun, upon that part within the tropics, is supposed to have expanded it there; which accounts for its being an oblate spheroid — If red hot iron be applied, hastily, to a drop of water, or to a spittle, upon a smith's anvil, ^{the} expansion will be so great, that an immediate explosion will take place — Water expands when turned into ice — hence, ice bursts bottles, conduit-pipes &c. — hence, also, its use in crumbling, and fertilizing, the ground — and, hence its effects, in crumbling, and throwing down, houses.

2. Fluidity — all bodies may be rendered fluid



heat - the fluidity of water is entirely owing to heat - when the degrees of heat are so low as 32° , by the thermometer, water becomes ice - fire is necessary at 62° .

3. Evaporation - all bodies ^{are} capable of it by heat - water, evaporated, is condensed into clouds, and falls in rain - Evaporation wastes all bodies - it produces cold - hence new-washed rooms are cool, and dangerous to sickly persons, ~~for the moisture, going off by evaporation, not only cools, but is imbibed at the pores~~ -

hence we are cooled in summer by the evaporation of sweat from the pores - The heat of the human body is the same in all climates, and is from 96 to 100 degrees; and however wonderful it may seem, yet it is an established fact, that the human body, in a heat of 120 , does not exceed this temperature, which is preserved by evaporation.

The broader the surface the greater the evaporation - hence, on a windy day, lakes, rivers &c. undergo a greater



greater evaporation than on a calm one. Evaporation increases with the removal of evaporated matter — hence, winds dry roads &c. quickly & hence, also, windy days are coldest, by removing perspiration, and giving access to cold air to come in contact with the body. The force of evaporation is ~~very great, as in steam engines.~~

4. Flame — this is occasioned by the access of fresh air, which is absolutely necessary to its existence. Inflammation, in all bodies, depends upon a certain principle, in them, called phlogiston; and bodies are more, or less, inflammable, in proportion as they contain a greater, or less, quantity of phlogiston. Who fresh air feeds flames; not air, when phlogisticated, will ~~extinguish~~ ^{neither feed flame nor support} ~~and destroy~~ animal life — hence, ^{of charcoal &c.} people who have gone to sleep, with a fire in their room, and no chimney, or other aperture, to admit fresh air, have been suffocated, in the night, by the air's being phlogisticated. The moving of flame, and its conical form, are owing to the action of air on it. Foot.

soot, in chimneys, is produced by vegetable matter, incompletely consumed, by slow fires—hence, it contains much phlogiston, and easily catches fire.

Heat has the most salutary effects in every part of the creation; withdraw it, and vegetables immediately disrobe themselves of all their gay and fragrant flowers leaves &c. No heat are all animals indebted for their existence—so well are the people of Egypt (and, lately, some nations of Europe) apprized of this, that they have contrived a method of producing chickens, in thousands; not by incubation, but by an artificial heat, imparted to the eggs, in ovens curiously constructed for that purpose. Several insects become torpid, when heat is withdrawn, and are revived, only, by the return of its cheering influence.

It has been happily proportioned by the great Creator of the universe to answer every purpose intended by his goodness—too much would expand all fluids—hence rivers would overflow
their

A solution of ice, and oil of vitriol, is much colder
than ice alone = A solution of snow and salt,
is extremely cold - hence, heat is lodged in
ice, and in snow.

their banks &c — it would also dissolve solid bodies, as earths — Too little — all nature would be held in icy chains; and our globe present the awful phenomenon of another chaos

Lecture 3.^d

On mixture — This is threefold —

1. Mixture properly so called, is when two bodies are united, and produce heat, as vitriolic acid and water.
2. Solution — is when two, or more, bodies are united, producing cold — a solution of water, and common salt, is colder than the water alone; by adding a little nitre, the solution will become still colder. Experiments may, here, be made, with a thermometer.
3. Diffusion — is, when two bodies, as oil, and water, are united by agitation — this union always ceases with the agitation, which produced it.

Decomposition.

As ~~there is~~ ^{every} body which has ~~not~~ some affinity to, and is capable of being united with, some

+ see Bergman's table printed by
Mr Donnan.

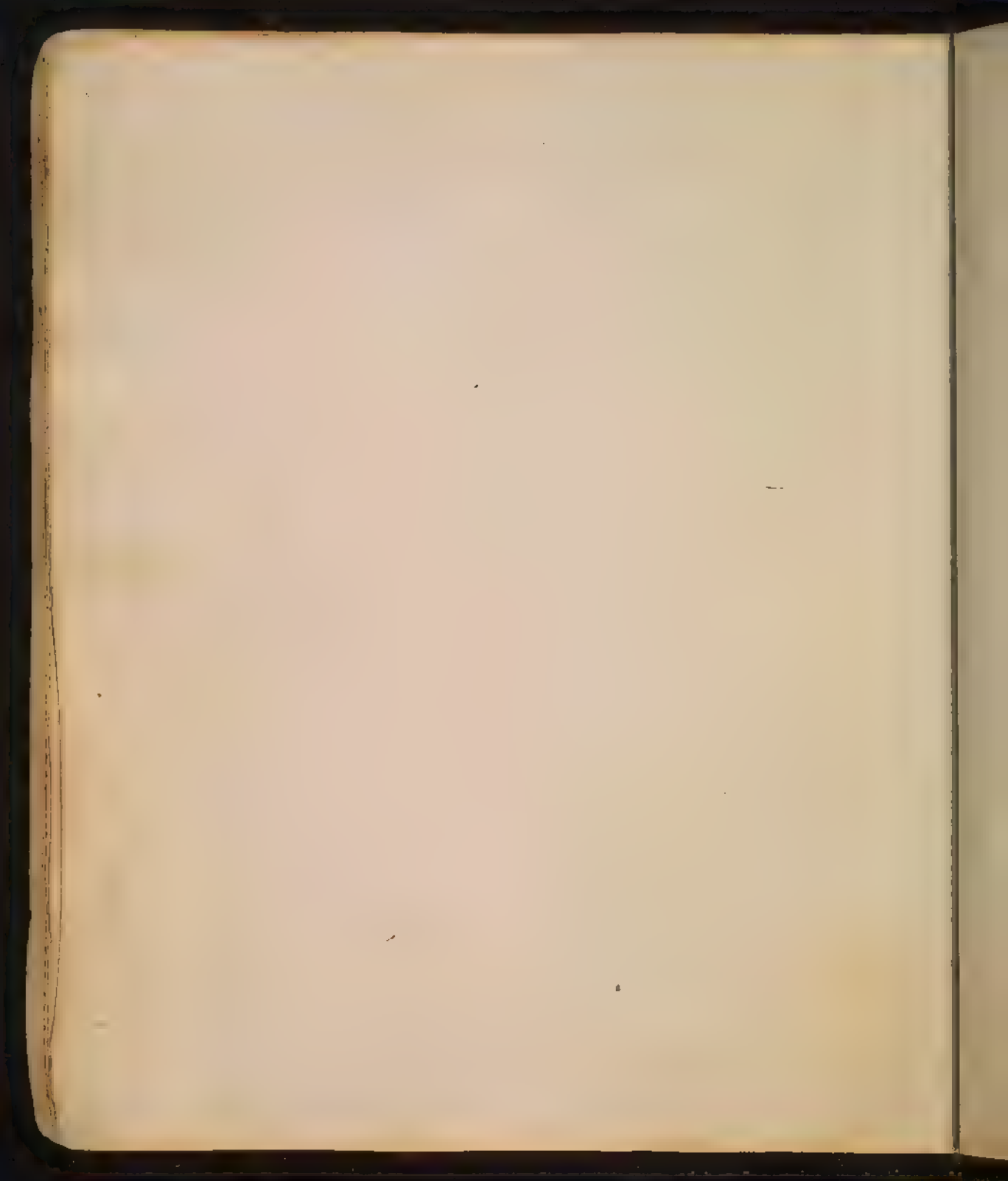
some other; so, the union of any two ^{or} bodies may be dissolved, by the addition of a third, which has a greater affinity, to one of those, than that with which it was united — and this is called decomposition or elective attraction.

— Thus, if to a solution of marble dust, in vitriolic acid, and water, we add a volatile alkali, ~~or~~ spirit of sal ammoniac, the vitriolic acid having a greater affinity to the vol. alk. will unite with it &c.

So well is this principle of affinity understood, that some chemists have calculated the different degrees of it, between different bodies, which they have arranged in tables for our instruction.

Salts.

When we divided into acids and alkalis — Acids are divided into the mineral — the vegetable — and the animal — Mineral acids are vitriolic, nitrous, ~~and~~ ^{or} marine — Vegetable acids are native, ^{or} lime juice, — or fermented, as vinegar — Animal acids are those in wine.



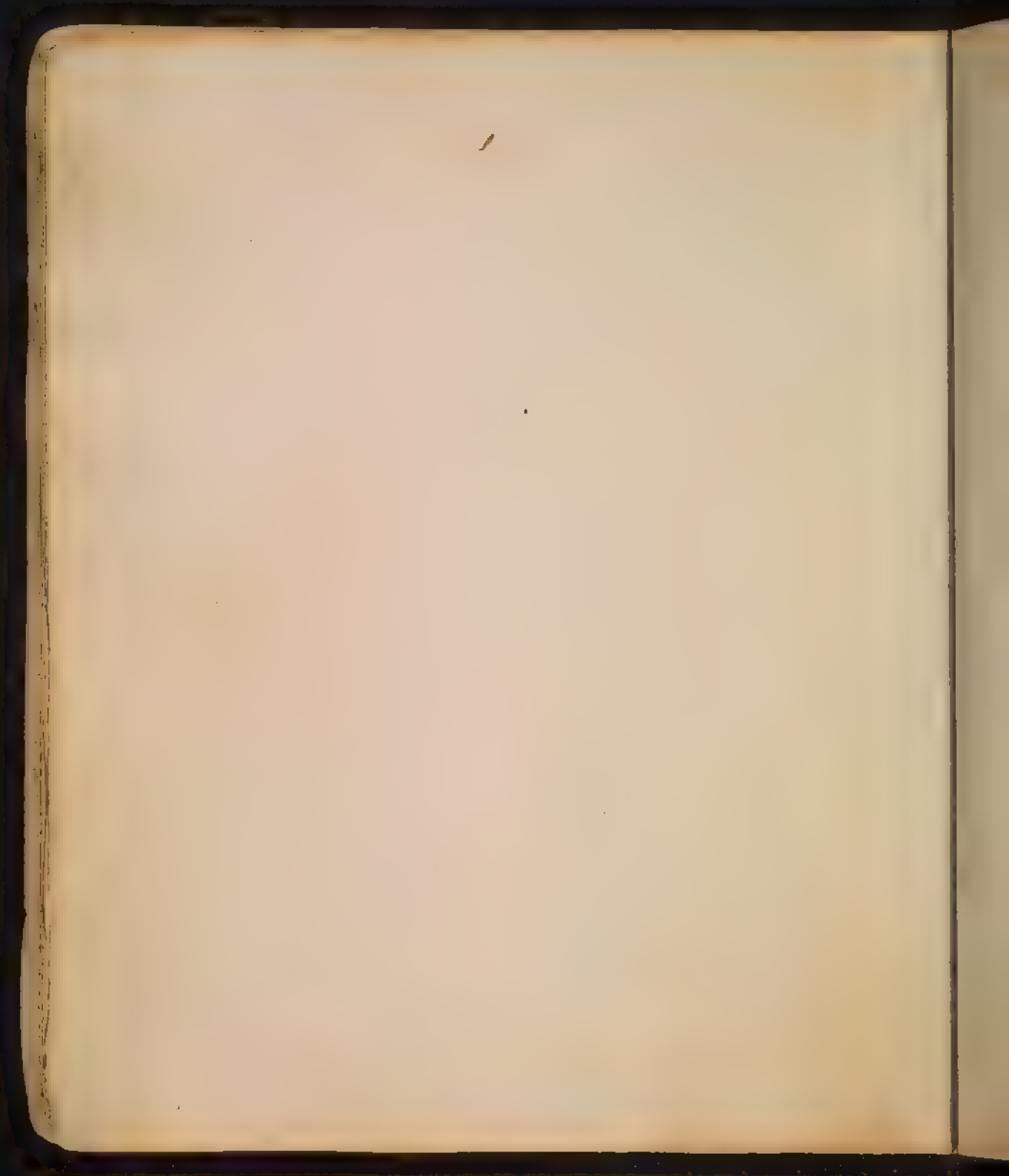
— in insects, as ants, wasps, bees &c — hence, the stings of them are poisonous — Acids change the syrop of violets to a red.

Alkalies are of two kinds — 1st fixed — as potash from burnt vegetables.

2^d volatiles, as hartshorn, which is obtained, by distillation, from animal substances. Alkalies change the syrop of violets green —

If an alkaline salt, and ^{any strong liquid acid, as} the vitriolic acid, be mixed together, they will immediately unite, and with a considerable effervescence, owing to the escape of fixed air from the alkali; by electric attraction — The proportion of fixed air, in alkalies, is $\frac{1}{4}$ of their weight: this may be proved by weighing the vit. acid, and alk. before, and after, mixture —

Alkalies are mild; but, having emitted their fixed air, are exceedingly corrosive, and caustic; if applied to the skin will burn it.



Lecture 4th

Neutral Salts,

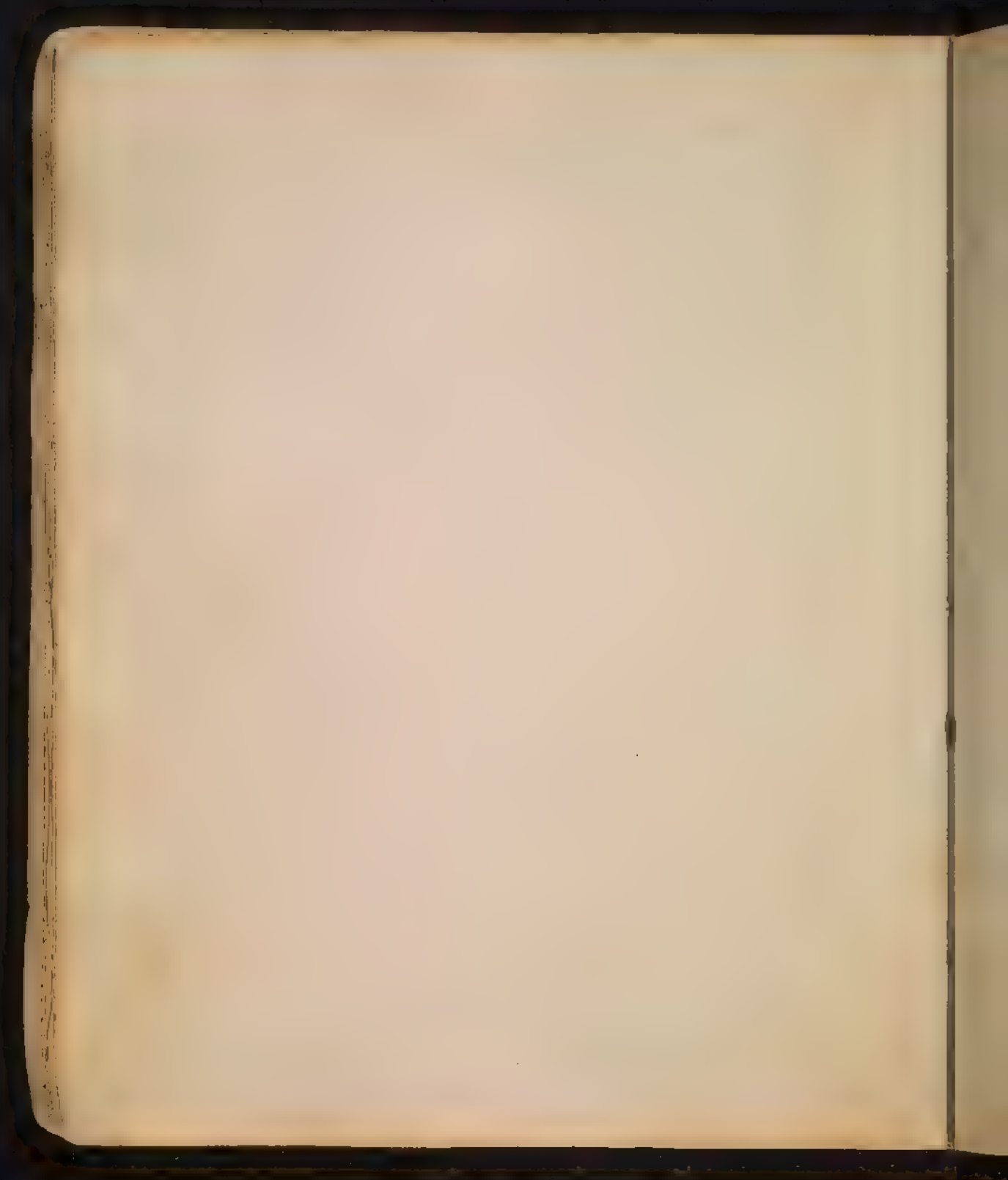
Common salt, Salt petre, or Glauber's salt, are composed of an acid and an alkali. Common salt, because of its extensive use in life, particularly deserves our attention —

We find the goodness of Providence displayed in an uncommon degree, in having distributed the means of procuring this necessary article to all his creatures — thus, in parts remote from the sea we find salt springs and rivers abound from which the people in those parts procure salt. In some parts of Europe, especially, at Cracow in Poland, there are large ^{beds} masses of fossil salt, or salt rock, and in the island of Ormus, in the Indian ocean, houses are built with it. In some places, a sort of salt, called murietic salt, is procured from vegetables, in which it abounds —

But the great and inexhaustible source of this valuable article is the sea. The great Disposer of all things has so ordered it that these waters should be impregnated with salt, for our use - also, to preserve them from putrefaction, from the numerous animals dying, and vegetables rotting, at the bottom. Another great advantage is, that salt water is more buoyant than fresh - hence, it is favourable to the navigation, and tends to promote a commercial and friendly intercourse between the different nations of the earth. - The water of the sea, like all other water, is originally ~~fresh~~ ^{salt}; and its saltness is entirely owing to a mixture of saline particles, ~~from foreign matters; hence~~ ^{rendered}. It is ^{more} salt within the tropics, than towards the poles, by ^{means of} evaporation.

Storms at sea, against which we are too apt to complain, are useful two ways -

1st ^{They} The agitation of the waves a greater surface ^{is exposed,} and, of course, a greater evaporation takes



takes place: the vapours thus exhaled, being condensed in clouds, fall in refreshing showers of rain, and impart their cheering influence to every production of our earth —

2.^d The water near the poles, & within the tropics, also of ^{fresh water} rivers, and of the sea, are hereby more intimately mixed together.

Salt is procured from sea water, —

1.st By drawing the water into canals, and leaving ^{it} to be evaporated, by the heat of the sun, the salt will remain at bottom. This method is practised at the Cape Verde islands, and in other warm climates —

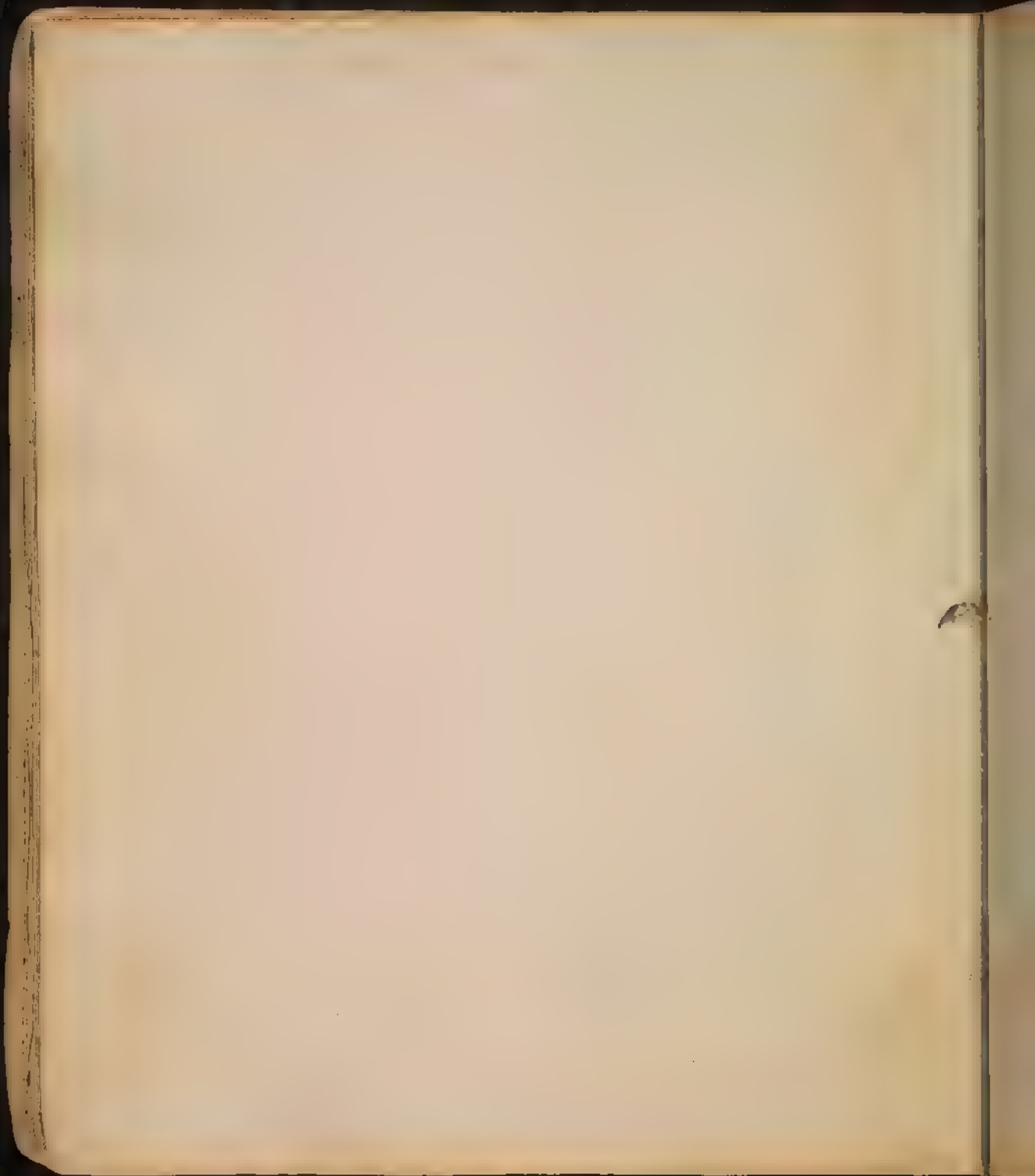
2.^d By boiling it, in large pans, as in England & France &c. For this process a curious method of purifying, or refining, it, is used — They take the whites of a few eggs, or some bullocks' blood, which they mix, and effectually incorporate, with a little of the water, and afterwards throw it into the pan — this —



this, while the water is ~~boiling~~^{boiling}, coagulates, and unites itself with the filth, which it raises to the surface of the water, when it begins to boil - this being skimmed off, every impurity is removed - after this manner pure salt is also obtained from sal gem, or salt rock, by boiling it in fresh water -

3.^d By freezing, as in Norway, the ice being removed, the salt will remain at bottom.

The water and salt are also separated by the pores ^{which} discharging ^{perspiration} ~~transpiration~~ - hence thirst may be removed, at sea, after the fresh water has been expended, by placing the person in a barrel of sea water; for the water, without any of its saline particles, will be imbibed ^{by} ~~at~~ the pores.



Of nitre, or salt petre.

It is of very extensive use in different arts; it is the principal ingredient in gun-powder; it is useful in glass making; and in medicine — but, its principal domestic use, is, in preserving meat, to which it communicates a red colour — hence, the method of procuring it is well worth the attention of every lady, who would wish to excel in housewifery, and domestic economy — This, like common salt, is composed of an acid and an alkali — if we take the sweepings of cellars, pigeon houses, stables &c. rubbish of old houses, and any animal, or vegetable, matters capable of putrefaction — these steeped in water will communicate a nitrous acid to it; if to this water an alkali, as lye, be added and boiled with it, the acid and alkali will unite, and produce nitre —



In Germany where domestic economy is much attended to every family generally makes its own salt petre. It is likewise obtained from tobacco leaves. —

Earths.

are, 1. Calcareous, as ^{stone} lime, chalk, marble &c. — lime stone, and marble, abound in Pennsylvania — chalk is found in large quantities in England; hence we hear of the white cliffs of Albion which are nothing else but great bodies of chalk.



chalk - one fourth part of the weight of these is fixed air they also contain some water - they are soluble in acids; and effervesce with them, by the escape of their fixed air - when calcined by a strong fire, they part with the water and air which they contained; acquire a great degree of causticity; and lose their power of effervescing with acids - thus, ^{quick} lime is obtained -

2. Gypsaceous, which are not affected by acids, as plaster of Paris, . It is much valued, and used as a manure for promoting the growth of grass.

3. Stony, as sand, stones, jewels &c. there are of different values - one, in the crown of the king of Great Britain ^{is valued at} ~~and~~ £100,000 - their variety of colour is owing to a mixture of metallic matter - hence a method has been dis-

discovered of making artificial stones,

from fine sand melted by alkalies glass is made & this discovery was first made by some men who were cast away on a desert island & having kindled a fire of wood upon the sandy beach they beheld a liquid running in streams along the ground which when cooled was found to be a transparent glass - this effect was produced by the alk. salt, in the wood, melting the sand underneath -

41. Asbestos, which resists fire; as ising glass - another species of this earth is, the asbestos, commonly called the salamander stone - this is of a greyish colour - it may be split into threads, from one to ten inches long, very fine, and brittle, yet somewhat tractable, inasmuch that it may be carded and spun

with cotton (not alone) — the cloth, made of
this, is endued with the wonderful property
of remaining unconsumed in the fire; the
fire only cleans, and makes it a little whiter
it deprives it also of a small portion of its weight
which may be by depriving it of its dirt —
In garments of this the Egyptians burn the
corpses of their departed friends, and so pre-
serve their ashes from being dispersed. —
of this a certain Sus^h Wright who lived on the
banks of Susquehanna, and was famed for
her industry, and ~~good housewifery~~ ^{great mental accomplishments}, made
a purse which she presented to Doctor Frank-
lin — this the Doctor, in a pretended fit of
passion at his servant, before a numerous
company of gentlemen, ~~and~~ ^{and} threw
into the fire; which so alarmed them that
they ran to save it; but how great was
their surprise on finding it entirely safe,
only a little whiter than before — The

The Doctor having explained this phenomenon to them, a very agreeable fit of mirth ensued. This stone is found at Anglesey, in Wales, and at Aberdeenshire in Scotland; it is also found in large beds in Chester county in Pennsylvania.

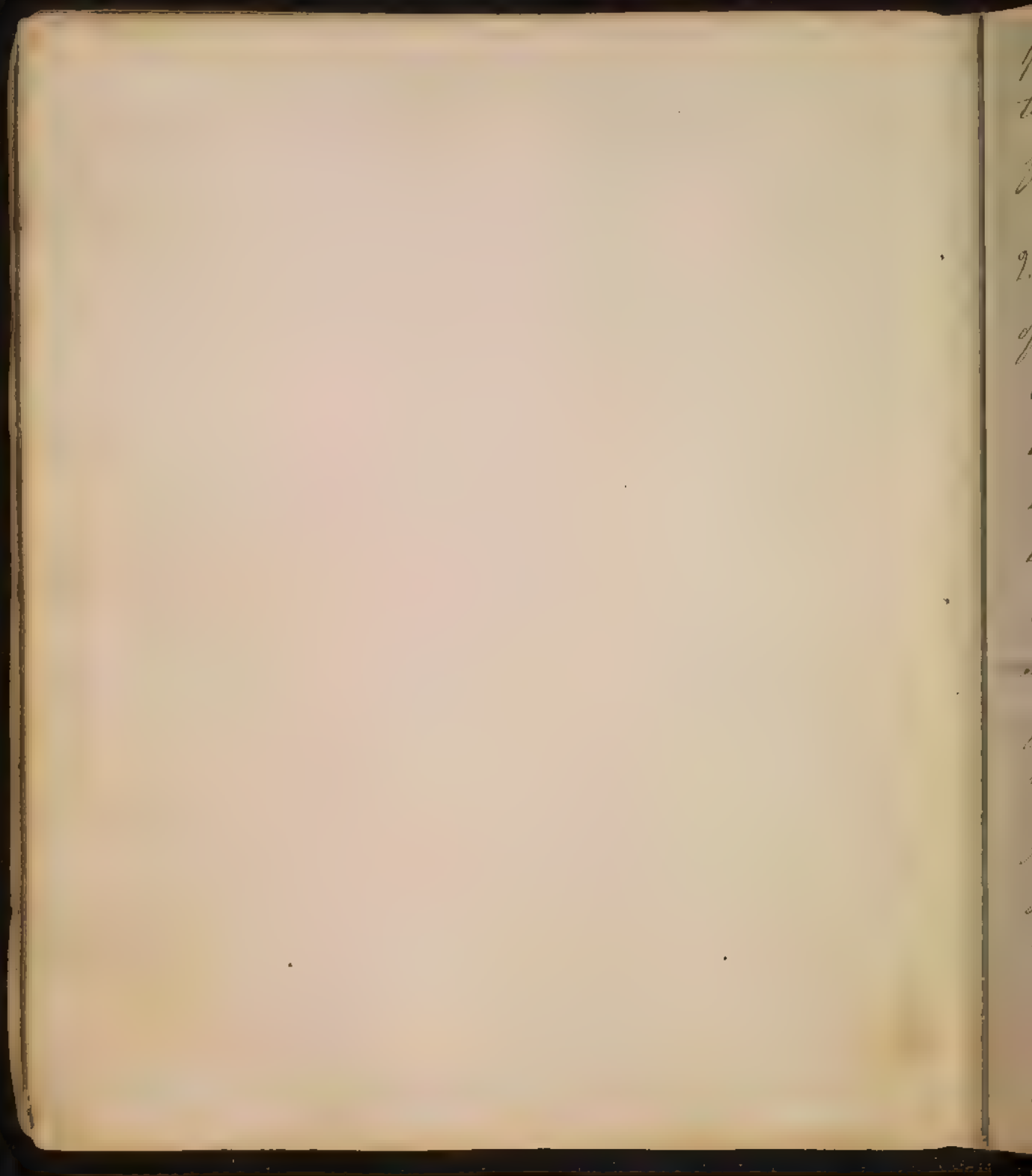
5. Clays are various in their colours according as they are mixed with metallic matters. fire by depriving them of their metals, makes them white - from clays thus burned are made tobacco pipes - also a sort of substitute for China ware, which is called delf from its having been first made at a town in Holland called Delft. Clays may be dissolved in acids. alum composed of vitriolic acid and clay. ~~is the product of a sort of liquor~~ this by adding an alkali, fixed or volatile, gives ~~adance~~ a neutral salt according to the nature of the acid added.

From a fine white clay, which the Chinese
term haoli, and a flinty earth, which they
call petunee, china ware is made -

Lecture 5th

Inflammable bodies.

These are, all animal, vegetable, and some
mineral substances - the diff^t sorts are,
1st Fuel of all kinds, which contains much
phlogiston, as sea or fossil coal - also charcoal,
which is much used by artificers in metals,
and is made by burning wood to coals, in
a pit covered over with earth - in Scotland,
and Ireland they burn a sort of black
earth called peat, or turf, which, being much
mixed with vegetable matters, is very in-
flammable - another sort of fuel is wood
which is more or less inflammable in
pro-



proportion to the quantity of phlogiston it contains. Pine & Hickory most inflammable, from their abounding most with phlogiston.

2. Oils— all sorts of these possess a considerable quantity of phlogiston— hence they are very inflammable. Oils are, aromatic, as oil of turpentine; and unctuous as sweet oil &c — unctuous oils are divided into the vegetable, as butter — and animal as lard, bear's grease &c — All unctuous oils are made rancid by heat, owing to a watry body, mixed with them, called mucilage; which ferments and rots in butter &c, in warm weather — This mucilage may be drawn off from butter by washing it with fresh water, for having a greater affinity to the ^{water} than to the oil a decomposition will take place, and it will unite with the water — the best way of preserving butter, is, to use but little water, and, to press it well.

In order to prevent rancidity in ^{oil} butter &c. it is
also ^{add to it a little} necessary to ~~mix it with~~ salt; this effectually sepe-
rates the mucilage from the oil; and dissolving
unites with it, and carries it to the bottom
leaving the pure oil at the top - After
butter or oil have become rancid, they may be pu-
rified considerably, by washing them with water.

3. Sulphur - this being composed of a vitriolic acid and
phlogiston is exceedingly inflammable - if it be burned,
and its fumes collected, in a vial, we shall have a
vitriolic acid - Sulphur is found mixed with all
metals; iron ore, in particular, abounds with it - In
many places, it is found, in large quantities, in
the bowels of the earth; where it frequently
causes fire, and, by water communicating with
this fire, earthquakes are produced; for the fire
converts the fixed air into elastic air, which,
together with a steam, or vapour, produced by
the contact of the flame & water, produces the
explosion and all the usual phenomena
of earthquakes. -

well washed &

Stale butter may be very greatly improved by being put
into a churn with buttermilk which has been produced from
fresh cream, or (which is better) into sweet milk, the action of
churning reduces it in appearance to its first state, and by con-
tinuing to churn, it again comes to the consistence of butter.

Butter washed well with water & churned th
it makes it keep sweet. De Lean





Sulphur unites with most metals, destroys their malleability and even dissolves them; but to melt gold, it must be united with a fixed alkaline salt, forming a compound called hepar sulphuris, or liver of sulphur. This effectually dissolves gold so as to make it soluble in water. This preparation is thought to be the means by which Moses dissolved the golden calf, idolatrously set up by the Israelites, which he caused them to drink. This, being an exceedingly bitter solution, was, in some degree, a punishment for their ~~impious conduct~~ ^{idolatry}. Moses being skilled in the wisdom of the Egyptians, to whom chemistry was early known, very probably acquired his knowledge of this science among them — Hepar sulphuris is made by melting sulphur with a gentle heat, and stirring into it, while melted, ^{with} four times its weight of dry alkaline salt — or, by boiling the sulphur in a solution of alkaline salt.

If any thing be written with a solution of lead, and a solution of hepar sulphuris be passed over it, when dry, the writing, formerly invisible, will immediately appear of a dark colour.

4. Spirits. These are composed of an acid, water, and a fine oil; they contain much phlogiston, hence they are very inflammable. - By distilling spirit of wine with vitriolic acid, we obtain that fine fragrant oil called ether; this is much lighter than any known fluid, except air. Ether poured upon a lump of sugar, and let fall to the bottom of a vessel, filled with vitriolic acid, and water, rises to the top, and escapes in flame. - This is vulgarly called a fire in water; but, since fire cannot exist in water, the flame can only take place at the surface. - There is also a certain oil called naphtha, produced from black bituminous earths, in milldams, and other stagnant waters; it is also found in some springs.



This oil is exceedingly light, ~~clear~~ ~~crystal~~, and highly inflammable. hence, it easily catches fire, on the surface of those waters wherein it is found. hence, we hear of burning lakes, and burning springs.

5. Resins. ~~as benzoin or turpentine from which~~
^{as} ~~rosin is procured~~ these dissolve in spirit of wine; hence varnishes are procured.

6. Phosphorus. This is composed of phlogiston fully united with ^{an} ~~nitric~~ vitriolic acid, and has the singular property of kindling into flame, spontaneously, when exposed to the air; for the phlogiston separates from the vitriolic acid, and unites with the air; when admitted. — Several bodies partake so much of the phosphoric nature, such as lightwood. — The fire fly is a phosphoric animal, and, when flying, discharges large quantities of phlogiston. hence, the ocean frequently seems to be on fire. — Meteors



Meteors are bodies filled with phlogiston, which separates from them in their motion. — The ignis fatuus, or, Jack with a lanthorn, may also be clasped with phosphoric bodies.



Lecture 6th
On metals.

They are divided - 1st into metals, which are malleable; as lead - 2^d seminetals, which are immalleable; as quicksilver - The malleability of metals is owing to phlogiston; the extraction of this by fire or acids makes them become a calx, or drop: this is called calcination of metals - By adding ^{a body that affords with} phlogiston to this calx. and melting it may be restored to metal again; this is called reduction of metals - Thus, grease melted with calx of lead reduces it to lead.

This calcination, and reduction, are truly emblematic of the resurrection of our bodies, at the last day. The soul is, as it were, its phlogiston; when separated by death, the body becomes, like a calx of metal; calcined; but, by the reunion of the soul, it again assumes its ancient form -

v. Gold

Of all metals the heaviest, the purest, and

the



the least liable to be affected by fire; air, ^{the} hence,
by the universal consent of all nations, ancient,
and modern, it is justly reckoned the most
valuable of metals; and is made use of in
coin, as a medium of commerce. Buttons,
Watches, &c. made of this metal, are very du-
rable; and because of their value, are apt to
be best taken care of, and longest preser-
ved. This metal is useful in gilding, and
an excellent means of preserving furniture;
it is capable of extension in wire, and leaf,
almost beyond conception: the tenacity of its
parts is amazingly great; for a piece of gold
wire is of an inch in diameter will support a
weight of 500 pounds: the colour of gold, of
all others, except green, is most delightful to
the eye. — When one of the inspired writers
attempted to convey, to man, some idea of the
grandeur, and magnificence, of the new Jerusa-
lem, he discovered the high estimation in
which

revelations 21. 14.

which gold was held, in those days; by saying
it ~~is~~ ^{is} ~~smaller~~ ^{is} ~~than~~ ^{is} ~~the~~ ^{is} ~~1500~~ ^{is} ~~miles~~ ^{is} ~~high~~ ^{is} ~~and~~ ^{is} ~~it~~ ^{is} ~~should~~ ^{is} ~~be~~ ^{is} ~~built~~ ^{is} ~~of~~ ^{is} ~~transparent~~ ^{is} ~~or~~ ^{is} ~~shining~~ ^{is}
of ~~fine~~ gold — Gold is found in different
parts of the world, especially at Brasil a
portuguese settlement in South America —
It may be melted by a combination of the
nitrous and marine acids called aqua re-
gia, or the royal water — a solution of it may
also be made by ^{hepar sulphuris &c.} ~~hepar sulphuris &c.~~ as has been
mentioned, in treating of inflammable bodies.

2. Silver,

This, next to gold, is the most perfect, fixed, and
ductile of all metals. The tenacity of its parts
is nearly one half less than that of gold; a silver
wire of 10 of an inch diam^r being unable to bear
more than 9 1/2 pounds. It is found in many
parts of the world; but, abounds most in Mexico,
and other parts of South America, belonging
to the Spaniards. At Mexico, twenty millions
of dollars are made annually; But so large
has



has this redundancy of wealth rendered the Spaniards, that they neglect agriculture and other useful arts, which might furnish them with the necessary, and convenient, articles of life — hence their dollars are drawn from them in exchange for the produce of different countries. in Pennsylvania we find Spanish dollars are received in large sums, in purchase of wheat &c. A solution of silver in aqua fortis, called lunas caustic, is sometimes used by ladies, to stain their hair black; from red or some other colour not pleasing to them; but, for this purpose, it is necessary to dilute a tea spoonful of the solution in half a pint of water — If it be not cautiously used, it is apt to corrode the hair; therefore, every person ^{using it} should consider, that the hair with which Providence has covered her head, altho' it may be red, is, nevertheless, preferable to a bald head. The stain, thus communicated to hair, does not continue long. —



3.^d ^{one of} Iron is the hardest and most elastic of metals -
this metal is of more real service to mankind
than, perhaps, all the other metals taken together,
being used in making implements of husbandry,
artificers tools, of all kinds, surgeons instruments,
culinary vessels &c. I wish I were not there
forced to add that it has been early employed
in making instruments of death, to carry on
war and bloodshed; but, since these things must
be for a time, let the friends of humanity
remember that this is not always to be
the case, and, with pleasure, look forward to
the time when swords shall be turned into
plough-shares, and spears into pruning
hooks, and nations learn the art of war no
more. Iron melts by heat, but the heat must
be very ~~intense~~ ^{intense}, as may be known at any
iron works, where this metal is used in cast-
ing pots &c. - At Carron iron works near
Ed.



Edinburgh, in Scotland, while the metal was
fusing in a reservoir, one of the proprietors
ascending a ladder to look into the reservoir
the brilliancy of the flame gave him a dizziness
which occasioned him to tumble in headlong;
some present immediately ran up the ladder,
but could perceive no appearance of him, so
that he must have been consumed in a mo-
ment. — All acids act upon iron, from this, by
the application of vitriolic acid, green vitriol, or
copperas is made, which is so useful in dying
astringent vegetables, and water impregnated
with iron, gives a black colour — hence, the only
things capable in making black are, ^{as} astringent
vegetables, as white oak bark, or galls, with
copperas, and water — thus ink is made — Water
acts upon iron, ^{corrodes} and rusts it



Iron contains a large quantity of phlogiston; iron filings catch fire on touching them with the blaze of a candle - hence fire is so easily procured from steel by percussion with a flint. It is found every where. It abounds in different parts of N. America and is exported in large quantities.

It is diffused in animals and in vegetables; even honey contains some of this metal -

^{3 mistle} Iron filings and sulphur, moistened with water, and pressed down close, in a few ~~hours~~^{days} expands, and grows hot; and, if the quantity is large, bursts into flame. Iron, by combination with inflammable matters, imbibes a larger quantity of phlogiston, and becomes much harder: it is then called steel.

4th Copper. This metal melts by heat - all acids act upon it as does water, or moist air - with vitriolic acid it makes blue vitriol, sometimes called Roman vitriol, or blue stone; which is of a very caustic and corrosive nature, and being dissolved in water gives a beautiful blue; by adding a volatile alkali, ~~or~~^{or} spirit of sal ammoniac, a decomposition ensues.



arises; for the vitriolic acid unites with the alkali and the copper, being thus separated; falls to the bottom. By the action of a vegetable acid, as vinegar, upon copper, a poisonous substance, called verdigrise, is formed — hence the danger of using copper vessels — Copper, by the addition of the semi-metal, zinc, becomes brass, pinchbeck &c. by adding a little zinc to copper the colour will incline to yellow; by adding more it will become pale, and by adding a still greater quantity it will at length become white. —

Bell metal, and that for telescopes & microscopes &c. and for casting cannon are made from a mixture of copper or brass — Copper is not so hard as to strike fire with flints or other stones hence it is used, in preference to Iron, for chisels, hammers, hoes &c. in gunpowder works —

5. Lead. This metal is easily melted and calcined and by continuing the heat we procure what is called yellow lead; and, by heating it yet further, we procure red lead, used in painting.



By adding phlogiston to the calx, in any of these stages, it will immediately be reduced to lead. Thus if to a red wafer, which contains some red lead, we add a little grease, and burn them, we will procure a little lead. ^{acid, especially} All vegetable acids, act upon lead, and produce a sweet, but poisonous, solution, which is sometimes wickedly used to recover sour wines. Printers types are made of lead and zinc.

6. Tin. This metal, tho' ^{more} ductile in plates than iron or steel; yet, is not capable of being extended in wire to the same degree that they are. vegetable acids have no effect upon it - hence, its use in covering over the inside of other metal vessels; as those of copper & lead - of tin and zinc pewter is made.

Semimetals

1. Zinc. It is chiefly used in compounding the other metals. The vitriolic acid combined with this gives white vitriol, which is used in medicine;

and

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and, also, in painting, to dry oil colours quickly.

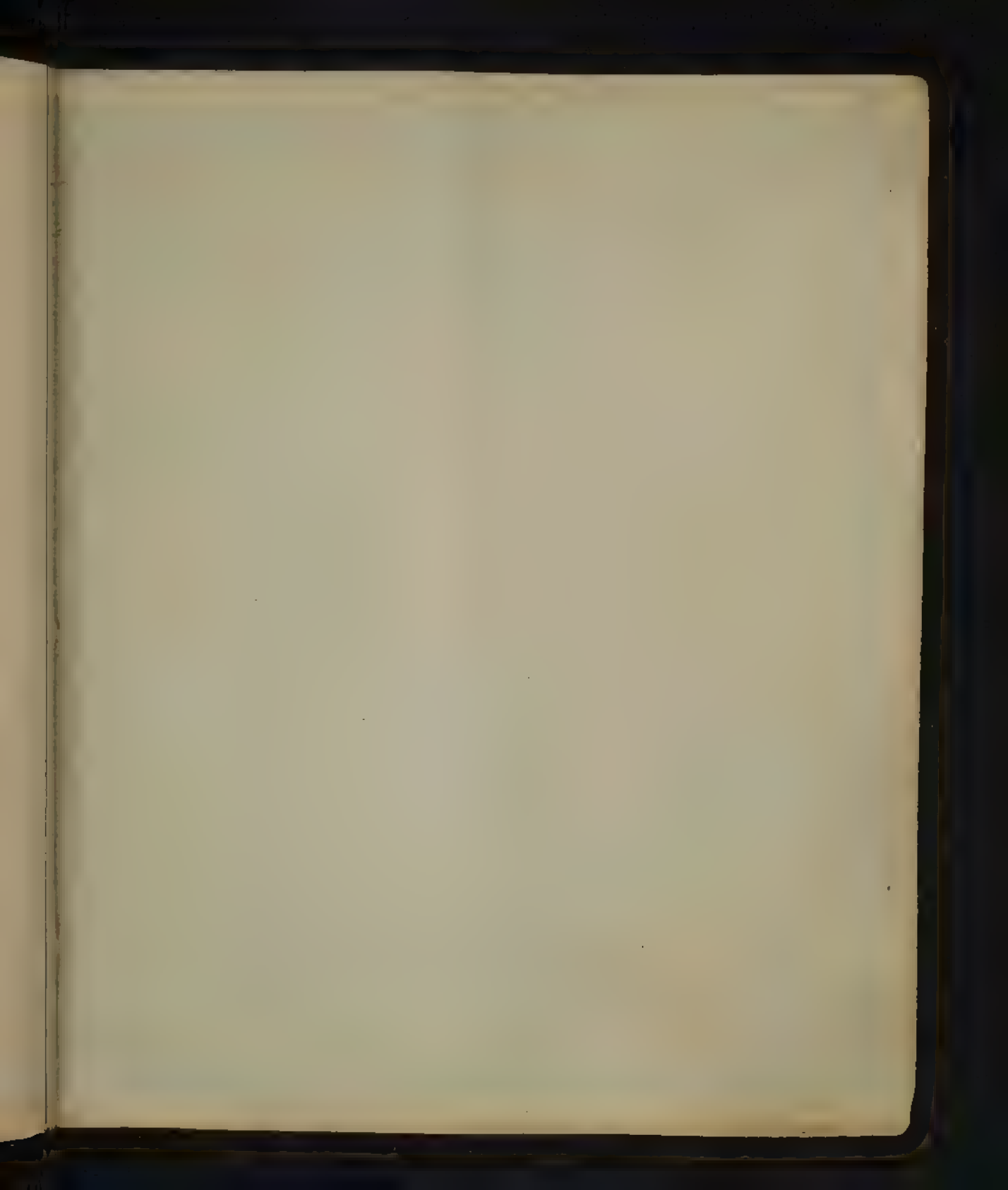
2. Mercury, or quicksilver, dissolves in acids of every kind; but, not in water: mixed with tin foil it is used in looking glasses to reflect the rays of light. — It unites with, or dissolves, all the metals; except iron. — Being mixed with any other metal, it still retains its white colour. — Hence, it renders brass extremely like unto silver. — It unites with, and softens, gold so that a ring may be taken off the finger, if too tight, without filing, by rubbing it with quicksilver; which will render ^{it} so soft, that it may be broken, in several pieces, with a persons fingers. —

19 : 100 :

13 : 120 : 19

$$\begin{array}{r} 19 \\ \hline 1000 \\ 120 \\ \hline 13 \overline{) 2200} \quad C 17 \\ 90 \\ \hline 2 \end{array}$$

11
proceeding the 1st day may



The Twelve Signs.

- ♈ *Aries*, or the Ram.
 ♉ *Taurus*, the Bull.
 ♊ *Gemini*, the Twins.
 ♋ *Cancer*, the Crab.
 ♌ *Leo*, the Lion.
 ♍ *Virgo*, the Virgin.
 ♎ *Libra*, the Balance.
 ♏ *Scorpio*, the Scorpion.
 ♐ *Sagittarius*, the Archer.
 ♑ *Capricornus*, the Goat.
 ♒ *Aquarius*, the Waterbearer.
 ♓ *Pisces*, the Fishes.

Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

Money.

L. s. d. q.

1—20—12—4

Amount on Weights.

T. C. Q. lb. oz. dr.

1—10—4—28—16—16

Troy Weights.

lb. oz. dwt. gr.

1—12—3—24

Apothecaries Weights.

lb. oz. dr. scr. gr.

1—12—3—24—10

Wine Measure.

T. P. H. G. Q. P. C.

1—2—4—8—16—32—64

Long Measure.

D. M. F. P. Y. F. I. B.

1—60—8—4—1—3—12—3

360 Degrees are the circumference of the Circle.

Land Measure.

A. R. F. T.

1—4—4—64

Dry Measure.

B. P. C. P. P. P.

1—4—2—2—2—2

Cloth Measure.

Y. Q. N. In.

1—4—4—16

Time.

T. D. H. M. S.

1—24—60—60

Thirty days, March, September,

April, June, and November;

February hath twenty-eight* alone;

All the rest have thirty-one.

* Twenty-nine, every 4th or leap year.

Numeration.

Millions.	Thousands.	Hundreds.	Tens.	Units.
Millions.	Thousands.	Hundreds.	Tens.	Units.
C X	C X	C X	C X	C X
9 8 7 6 5 4 3 2 1	9 8 7 6 5 4 3 2 1	9 8 7 6 5 4 3 2 1	9 8 7 6 5 4 3 2 1	9 8 7 6 5 4 3 2 1
3 0 5 2 1 4 6 8 0	3 0 5 2 1 4 6 8 0	3 0 5 2 1 4 6 8 0	3 0 5 2 1 4 6 8 0	3 0 5 2 1 4 6 8 0
2 0 4 6 8 0 9 5	2 0 4 6 8 0 9 5	2 0 4 6 8 0 9 5	2 0 4 6 8 0 9 5	2 0 4 6 8 0 9 5
4 0 2 5 3 0 0	4 0 2 5 3 0 0	4 0 2 5 3 0 0	4 0 2 5 3 0 0	4 0 2 5 3 0 0
8 2 0 7 5 3	8 2 0 7 5 3	8 2 0 7 5 3	8 2 0 7 5 3	8 2 0 7 5 3
6 0 0 9 8	6 0 0 9 8	6 0 0 9 8	6 0 0 9 8	6 0 0 9 8
5 0 0 1	5 0 0 1	5 0 0 1	5 0 0 1	5 0 0 1
7 0 0	7 0 0	7 0 0	7 0 0	7 0 0
9 1	9 1	9 1	9 1	9 1
4	4	4	4	4

Pence Table.

d.	s.	d.
20	1	8
30	2	6
40	3	4
50	4	2
60	5	0
70	5	10
80	6	8
90	7	6
100	8	4
110	9	2
120	10	0

Numerical Letters.

1 5 10 50 100 500 1000
 I. V. X. L. C. D. M.
 MDCCCLXXXVII.

BOOK

Printed for ANDREW BROWN, Principal of the Young Ladies' Academy.

YOUNG LADIES' ACADEMY,

Near St. Paul's Church, in Third Street, Philadelphia.

HEAR, ye children, the instruction of a father; and attend to know understanding. Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get understanding.—Exalt her, and she shall promote thee; she shall bring thee to honour when thou dost embrace her. She shall give to thine head an ornament of grace; a crown of glory shall she deliver to thee.—*PROV. iv. 1, 7, 8, 9.*
If sinners entice thee, consent thou not.—*PROV. i. 12.*

To write a free and legible hand, and to understand common arithmetic, are indispensable requisites.—*Mrs CHAPONE'S Letters.*

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a good education is not that they should become dancers, singers, players, or painters: its real object is, to make them good daughters, good wives, good mistresses, good members of society, and good christians.—*Miss MOORE'S Essays.*

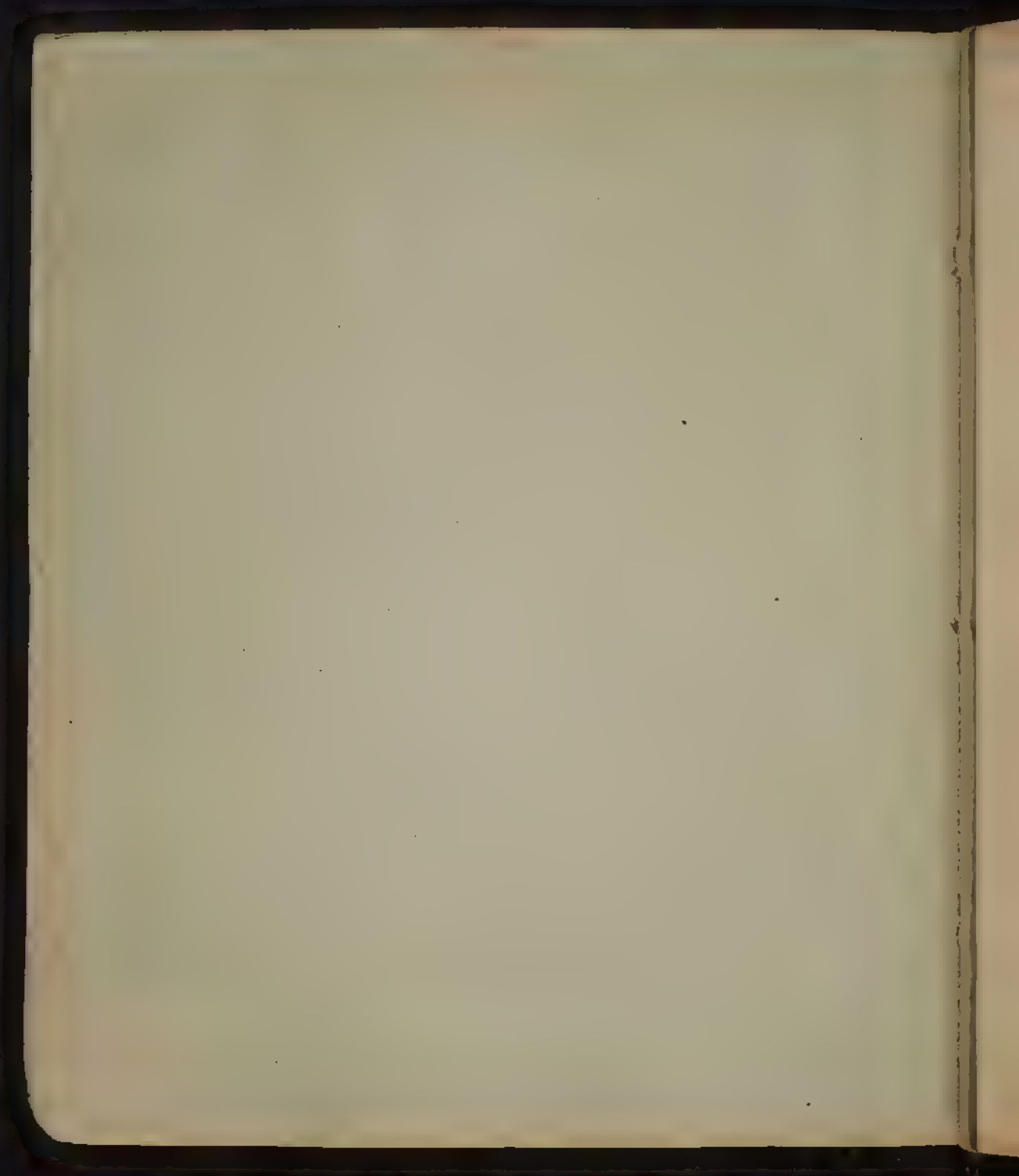
If your endeavours are deficient, it is in vain that you have tutors, books, and all the external apparatus of literary pursuits. You must love learning, if you intend to possess it. In order to love it, you must feel its delights; in order to feel its delights, you must apply to it, however irksome at first, closely, constantly, and for a considerable time.

Pleasant, indeed, are all the paths which lead to polite and elegant literature. You, then, is surely a lot peculiarly happy.—Value duly the opportunities you enjoy, and which are denied to thousands of your fellow creatures.

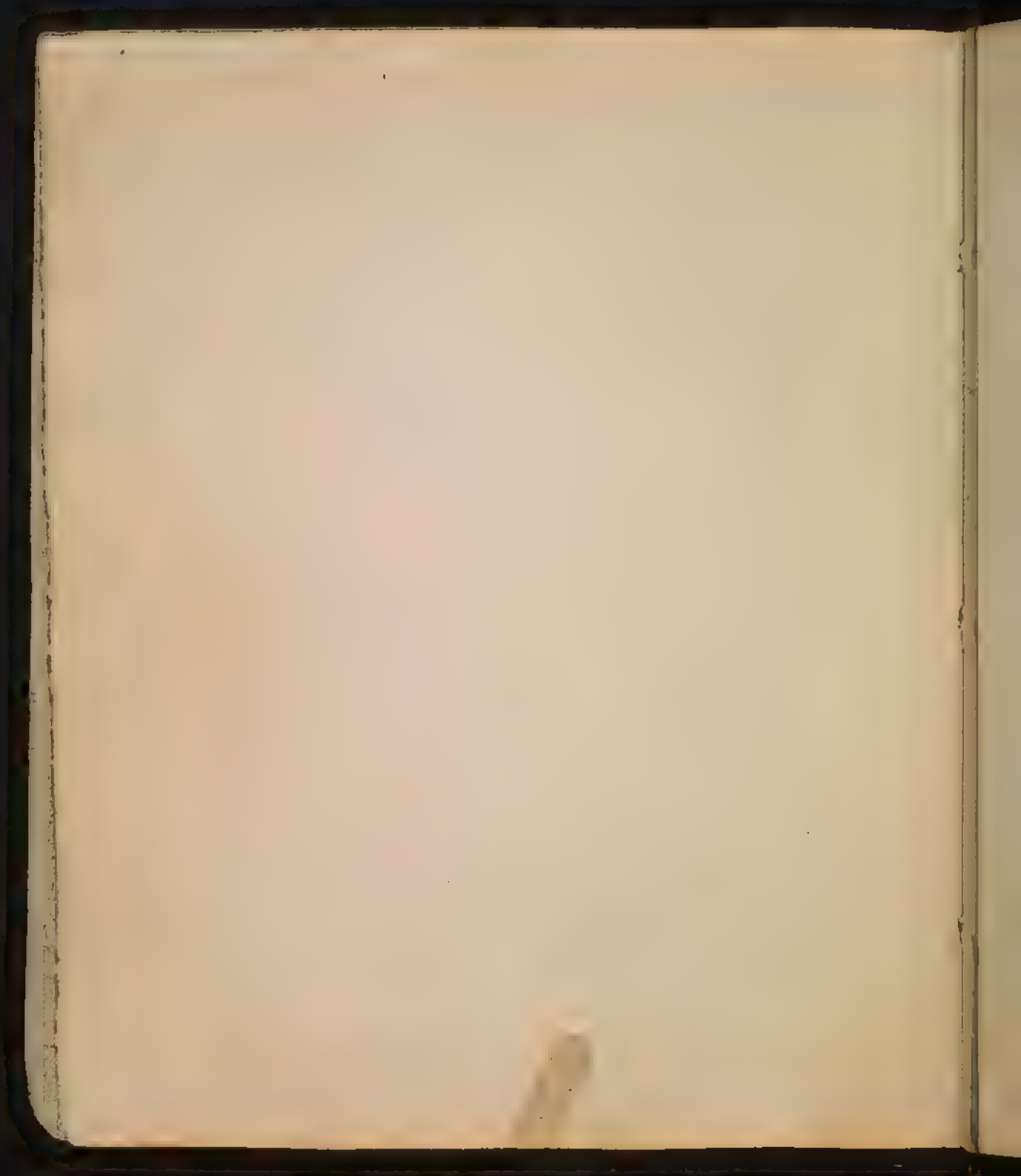
Without exemplary diligence, you will make but a contemptible proficiency. You may pass through the forms of schools—but you will bring nothing away from them of real value.—Your instructor may, indeed, confine you within the walls of a school, a certain number of hours. He may place books before you, and compel you to fix your eyes upon them; but no authority can chain down your mind.

That learning belongs not to the female character, and that the female mind is incapable of a degree of improvement equal to that of the other sex, are narrow and unphilosophical prejudices. The present times exhibit most honourable instances of female learning and genius. The superior advantages of boys' education, are, perhaps, the sole reason of their subsequent superiority. Learning is equally attainable, and, I think, equally valuable, for the satisfaction arising from it, to a woman as a man.—*KNOX.*





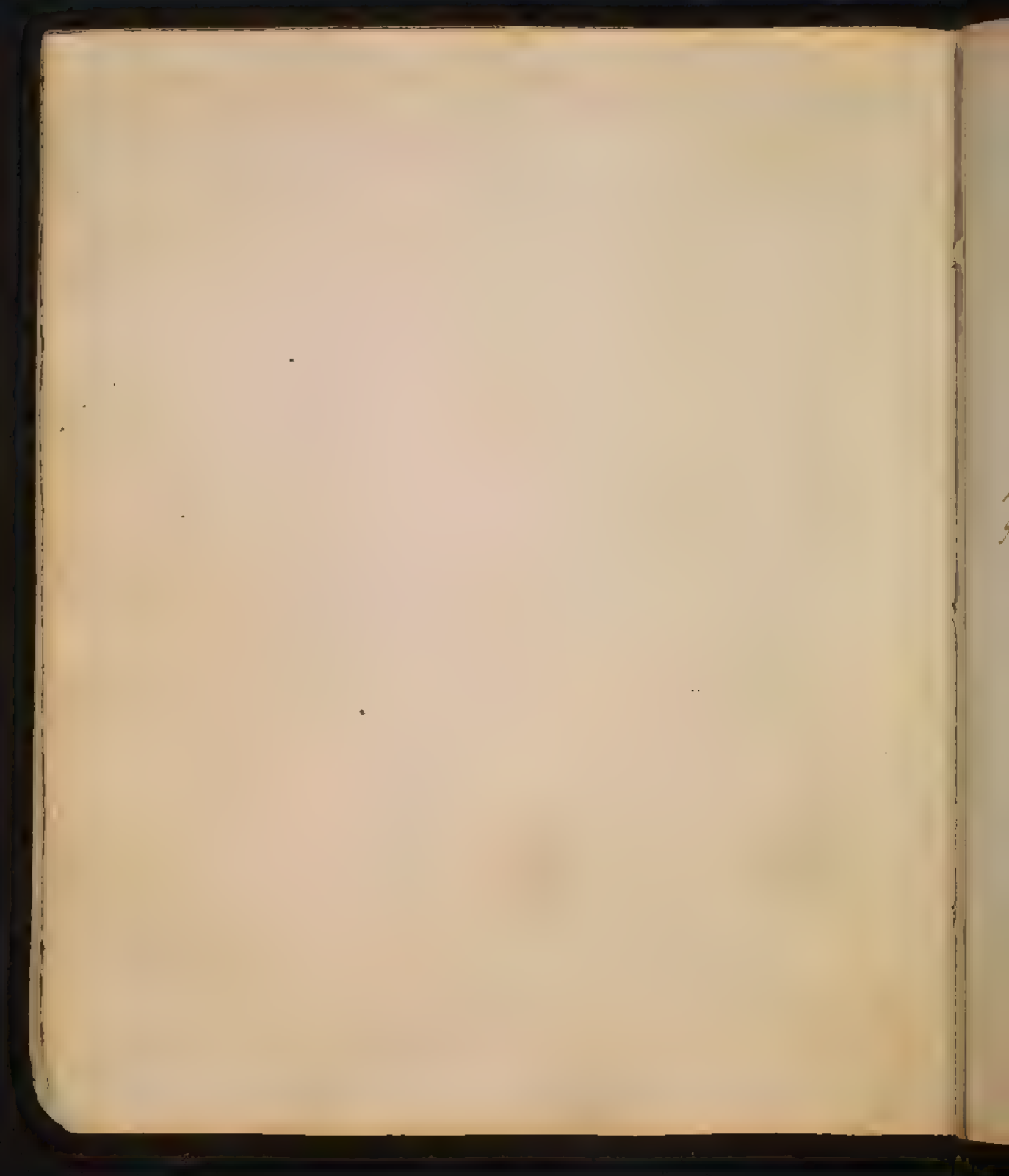




Lecture 7th 1
On waters.

There is but one simple, original, and pure water; all variety in waters being occasioned by impurities received from a mixture with foreign matters; and these are visible, or invisible.

1. Visible — at certain seasons of the year, after a shower of rain has fallen, we often perceive the waters to be covered with a yellow scum, and to emit a strong sulphureous smell: this is produced by a yellow powder, ^{called rotten}, contained in white lilies and other vegetables, which being tossed about by the winds, and carried up in vapour, condenses, and falls with rain. —
2. Another cause of the variety of colour in water is sand at the bottom; where water is not very deep, it will appear of the same colour as the sand; hence, the red appearance of the water in the red sea, from red sand at its bottom.



3. Water frequently receive² their apparent colour from a mixture of small animals, which are sometimes invisible to the naked eye, but may be viewed by the assistance of a microscope. Penn, in his voyage round the globe, found a part of the South sea red as blood; which, upon examination, appeared to be occasioned by innumerable swarms of small red animals, mixed with the water.

11. Water receives a green colour from vegetables, growing therein; these, in stagnated waters, produce a green scum on the surface, and are extremely serviceable, in ~~preventing~~^{correcting} the noxious vapours which arise from the ~~from being inhaled~~^{water}, and rendering our air foul and unwholesome; this good arises out of evil — or rather, what is a seeming evil, is a real good —

Invisible causes of water's impurity —

1. Salts — almost all ~~new~~ waters contain a considerable quantity of salt: I have extracted no less than two grains of salt from a quart of

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+

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the ^{purest} common pump³ water, in Philadelphia—
common salt may be detected in water by lu-
mar caustic; for, on adding this ingredient, the
water becomes muddy, and a decomposition
immediately takes place—the nitrous acid, of
the lum. caust. uniting with the alkaline salts,
of the ~~water~~—common salt, & the muratic acid

2. Calcareous earths ^{with the salt of the silver} are frequently the cause
of impurity in water.

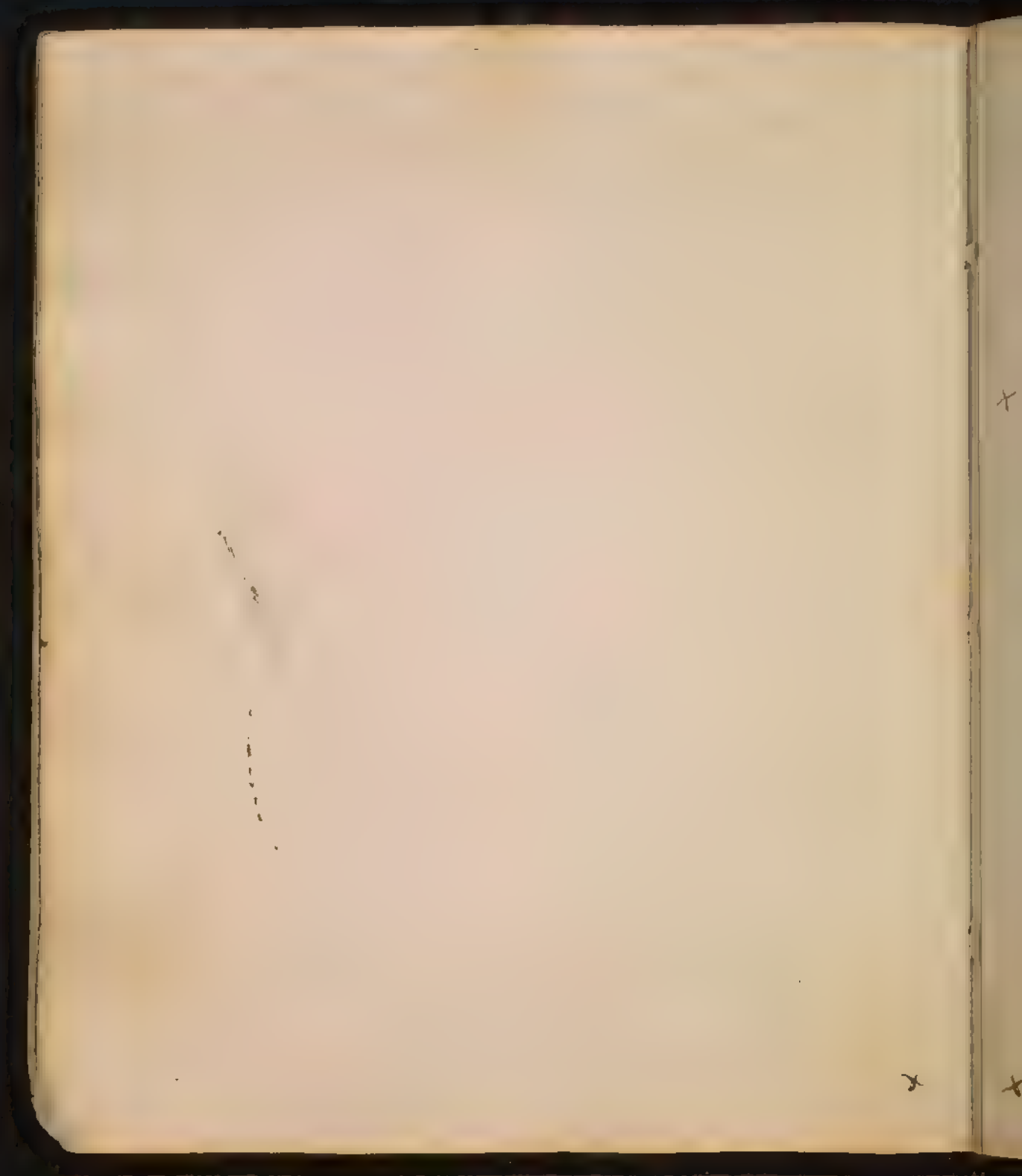
3. Metals, especially iron, occasion a change in
+ water. Chalybeate waters are much impregnat-
ed with this metal.— Iron may be detected
in water by astringent vegetables, ^{such as oak galls} which will
change it to black, as oak galls.—

4. Fixed air. Cypmont water abounds with this,
and is also impregnated with iron; this water
is used in medicine against complaints in
the stomach; it serves, instead of yeast, for bak-
ing; it has an acid brisk taste; during the
late war the troops stationed at Saratoga
Cured.



used pyrmont water; ^{by} procured, from a spring
in that neighbourhood, both for yeast, and
as a substitute for rum, of which they were
destitute; they became very fond of it, and it
is said; ~~became~~ ^{were} intoxicated by drinking it.

Artificial pyrmont water ^{is often} ~~may~~ be made, by adding
fixed air to common water; the fixed air may
be obtained from any calcareous earth—thus,
in a machine, for this purpose, there is a lower
part, which serves to hold the marble dust, or
body containing fixed air; the vitriolic acid be-
ing added to this, a decomposition, with an ef-
ferescence, takes place, and, the fixed air escapes,
thro' a small aperture, into the upper part of
the machine, which contains the water; to
this it soon imparts its virtue; the aperture,
thro which the air escapes, is so small that
no water can pass from the upper, to the lower,
part of the machine—A rusty nail, thrown
into the water, along with the fixed air, is also
of use, to in communicating the taste of iron to it.

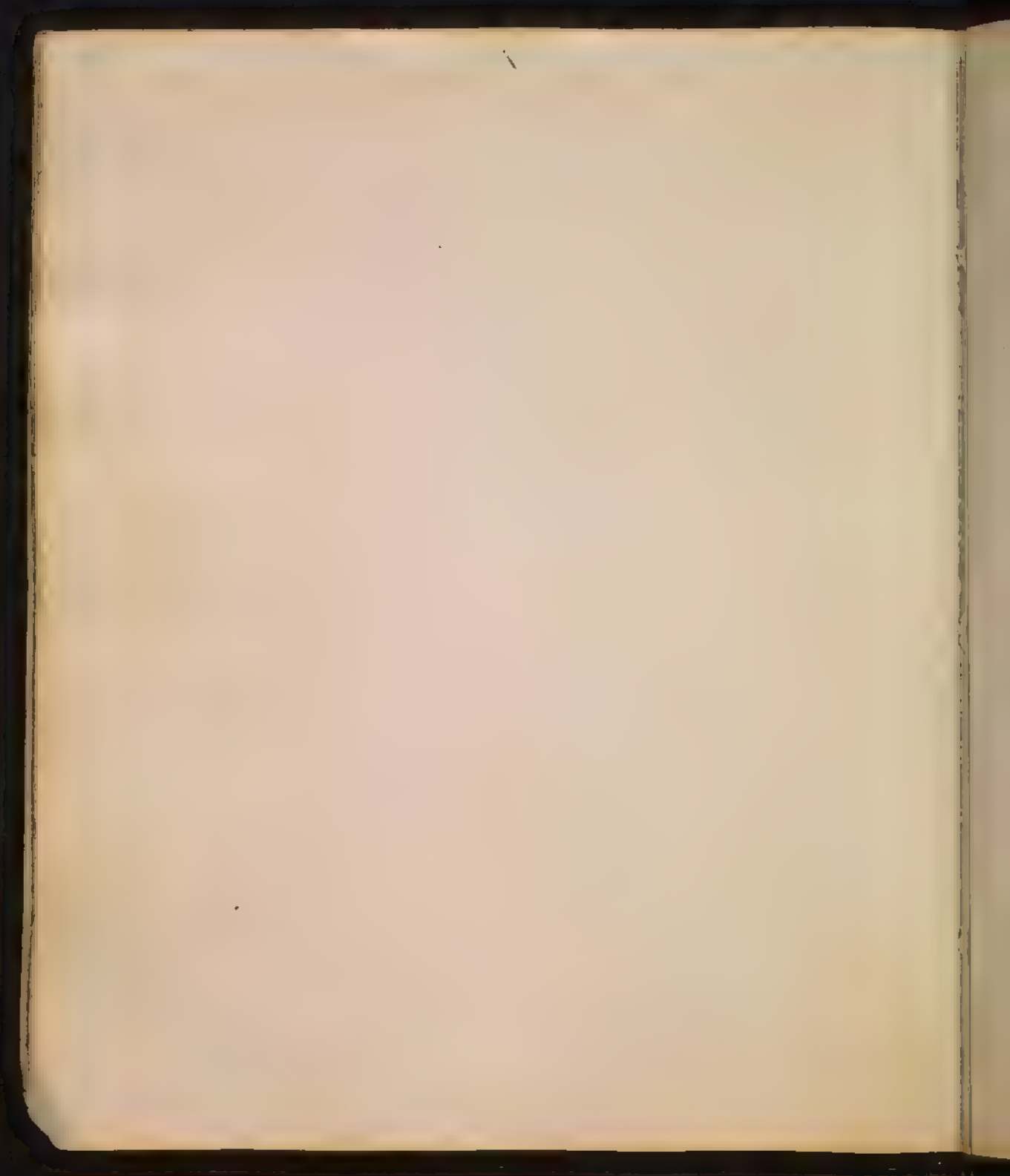


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The lightest, and purest, waters are rain, and
snow water—next to these is river water, which
is better than spring ^{or pumps} water for boiling vegeta-
bles; these pure waters, being soft, are also fittest
for washing; they produce a lather with soap,
which very impure water will not do:—hence,
x the purity, or impurity, of water ^{is} discovera-
ble, by means of soap—The same may be
known by means of a Hydrostatic Balance,
which tries the purity of water, by weighing it.
In wells, or pumps, where the water is suffered
to stagnate, it takes in foreign matter and
becomes very impure:—hence, the water of
pumps, which are seldom used, is much worse
than that of pumps ^{from} which great quantities
of water are taken—by undergoing a
greater stagnation. Pure water contributes much
to health, and longevity—How pleasant then must be
that pure water, of new Jerusalem, clear as crystal, &c!
x which is made mention of in scripture

1. Common air, of which our atmosphere is composed, and is about fifty miles in height; of this air we breathe a gallon in a minute; It has elasticity, and weight; every square inch on the surface of our bodies supports no less than fifteen pounds of air; this we are enabled to support, by the means of ^{the} ~~an~~ internal ^{in our bodies} air, which resists the pressure of the external air.

By the assistance of a hygrometer, we are enabled to discover the moisture of the air; and, by means of a barometer, we may know its weight—these immediately indicate any approaching change in the weather.

2. Dephlogisticated, or ^{empireal} pure, air. This is air perfectly freed from phlogiston, and is the purest of all air. $\frac{1}{4}$ or $\frac{1}{5}$ of all we breathe is pure. — This pure air abounds in, and is secreted from vegetables: it also abounds in red lead, and in saltpetre. This pure air gives a redness to the blood; and is extremely exhilarating—hence the highest co-



7
sour blood is found to flow in the veins of
those, who breathe most of this air—hence also,
salt petre imparts a fine red colour to hams &c.
Animal life ^{exists} is five times as long in this as in com-
mon air—hence, the advantage, and refreshment,
of trees, and other vegetables, near our dwelling
houses; and of frequently walking in gardens,
planted with flowers, and other fragrant herbs.

So enlivening is this air that, according to Milton,
Satan himself was, for a moment, exhilarated,
by breathing the pure air, ^{near} the garden of
Eden—The antediluvian air was exceedingly
pure, perhaps, entirely dephlogisticated; there were
then no marshes, fens, nor lakes of stagnant,
and putrid, water; to emit fogs, and exhale
noxious vapours—Hence we may easily ac-
count for the surprising longevity of men
before the flood—The new Heavens of which
we read in the book of revelations means no
more than a new atmosphere; that is one



consisting entirely of pure air. This, like the pure water, will ^{probably} contribute to the health, and pleasure, of the inhabitants of the new Jerusalem.

+ 3. Inflammable air. This sort of air is extremely light and inflammable - hence it has a tendency to rise upwards; and raises balloons to an enormous height. It is procured from iron filings by ~~the~~ means of the vitriolic acid - Fire damps in mines and caves is owing to the presence of inflammable air; this is capable of being set on fire by the blaze of a candle, &c. not by sparks. - On the contrary, gunpowder, which abounds with fixed air, cannot be set on fire with a blaze but, may, by a spark.

4. Phlogisticated Air, or air charged with phlogiston. It is produced - 1st from fire, as in ^a some close room, where people are so ignorant of its ill effects, as to burn charcoal &c. without any chimney, or other aperture, to admit a supply of fresh air. in such places it has often proved fatal; for

9
Introduction

I come now to deliver ^{to} you agreeably to my
promise a few lectures upon the application
of Chemistry - Nat. Philosophy - Medicine &
Astronomy to domestic & culinary purposes.
- This is an important part of Science,
and absolutely necessary to a physician.
It includes many things that are essential
to the preservation of health, & the prevention
of diseases. It has for its object, the convenience
& pleasures of life, and those ^{shd} come under the
knowledge & direction of a physician. ~~for~~
~~the defect of food & the~~ They will serve to
extend the empire of our Science, & to
~~also~~ increase the dignity & influence of
the Medical Characters.

10

for phlogisticated air will neither feed flame
nor support animal life - 2.^d air becomes phlo-
gisticated by the breath of animals; and this air
is by no means safe to be breathed again, until
it has been purified, by mixing with fresh air.

5. Fixed air, which abounds in calcareous earths, as
lime, marble &c. from these it may be separated
by the vitriolic acid - This air abounds also in
cellars &c. to which fresh air has no access - it is
extremely dangerous to go into cellars where this
air is found - a person, going into such places,
should hold a candle before him; if it burns
clearly, he may venture in, with safety; but
if it is extinguished, or burns dimly, he should
start back instantly; otherwise, he is in the most
imminent danger - a chimney in a cellar ef-
fectually prevents the bad effects of this deadly
air, by furnishing a constant supply of fresh
air - In some places this air arises from caves

Man ^{came} ~~was~~ originally into the world
 like the ~~be~~ beasts of the forests - but under
 very different circumstances. His weakness
 rendered a shelter necessary for him from
 the inclemencies of the weather, and his
 numerous duties - obligations - & inclinations
 rendered ~~certain~~ form - convenience - &
 pleasure necessary for him in the construction
 of this shelter from heat - cold ^{wind} - moisture.
 and to these first necessities ^{of life} ~~of the~~ & philosophy
 were first employed in the construction,
^{of a house}
 & this therefore shall be the subject of our
 first lecture.

in noxious vapours: from a ¹²pit, called the
grotto del cane, near Naples, in Italy, there
is a constant exhalation of this air, which
kills every dog that approaches near to it,
for as it seldom rises more than a foot
or two from the surface of the ground, it does not
affect animals that can breathe above the
height of the air.

Upon fixed air, in the charcoal, used in making
gunpowder, depends the explosion produced by
its catching fire. And it is also the basis of
the pulvis fulminans, or thundering powder.

This is sometimes used, in theatrical amusements,
to produce an artificial thundering &c. It is
composed of three parts of nitre, two of the dry
alkali of tartar, and one of sulphur, ground to-
gether. If a ^{small} quantity of this powder be laid
on an iron plate, and slowly heated, it will
explode, when it arrives at a certain degree of heat,
with astonishing violence and noise - owing to



the sudden escape of fixed air, from the alkali.

+

be

Lecture 8th 13

Having finished ^{our} general principles we come to ~~their~~ ^{your} applications. — Considering how much duty and necessity conspire to confine a lady to her house, its convenience is of great consequence to her. I shall begin ~~therefore~~ ^{with} any account Of the direction of a house.

+ In many parts of Europe, especially in Great Britain, dwelling houses are, generally, placed East and West. ~~We~~ accustomed to adopt every European fashion, and custom, whether suited to our convenience, or not, we have been too ready to follow them in this; for, however proper this direction may be, in the temperate climate of Great Britain, it is by no means adapted to the extremes, of heat, and cold, which we experience in this country. —

The most convenient situation, for our climate, is to have our houses North and South; with the front to the Southward; the advantage of such a direction, in winter, is obvious to every person. —

It may be objected that we¹⁴ should be exposed to the scorching heat of the sun in summer; if this even were to be the case, the fine southerly breezes, which generally blow at this season of the year, would more than make amends for the other inconvenience; but the sun's beams may be kept off, in a great measure, by awnings or by a piazza - should be defended by trees from insalubrations. Materials.

The materials used in building houses, are - Wood, in logs, or in boards; stone; bricks; and, called in England, Cob's marble; - of these the most durable is stone, as not being easily destroyed by fire &c. next is brick &c. —

But, since one great point to be considered, is, how to render a house wholesome and comfortable; and, as this can only be done, by using such materials as may prevent damp, by absorbing the moisture; no material, in this country, is preferable to wood, for that purpose; it being very absorbent —

Stone

+ when plastered, the moisture is precipitated
by the cold, & settles on the inside -

+ Crowded rooms unhealthy especially
with candles, & why - from phlogisticated
Air:

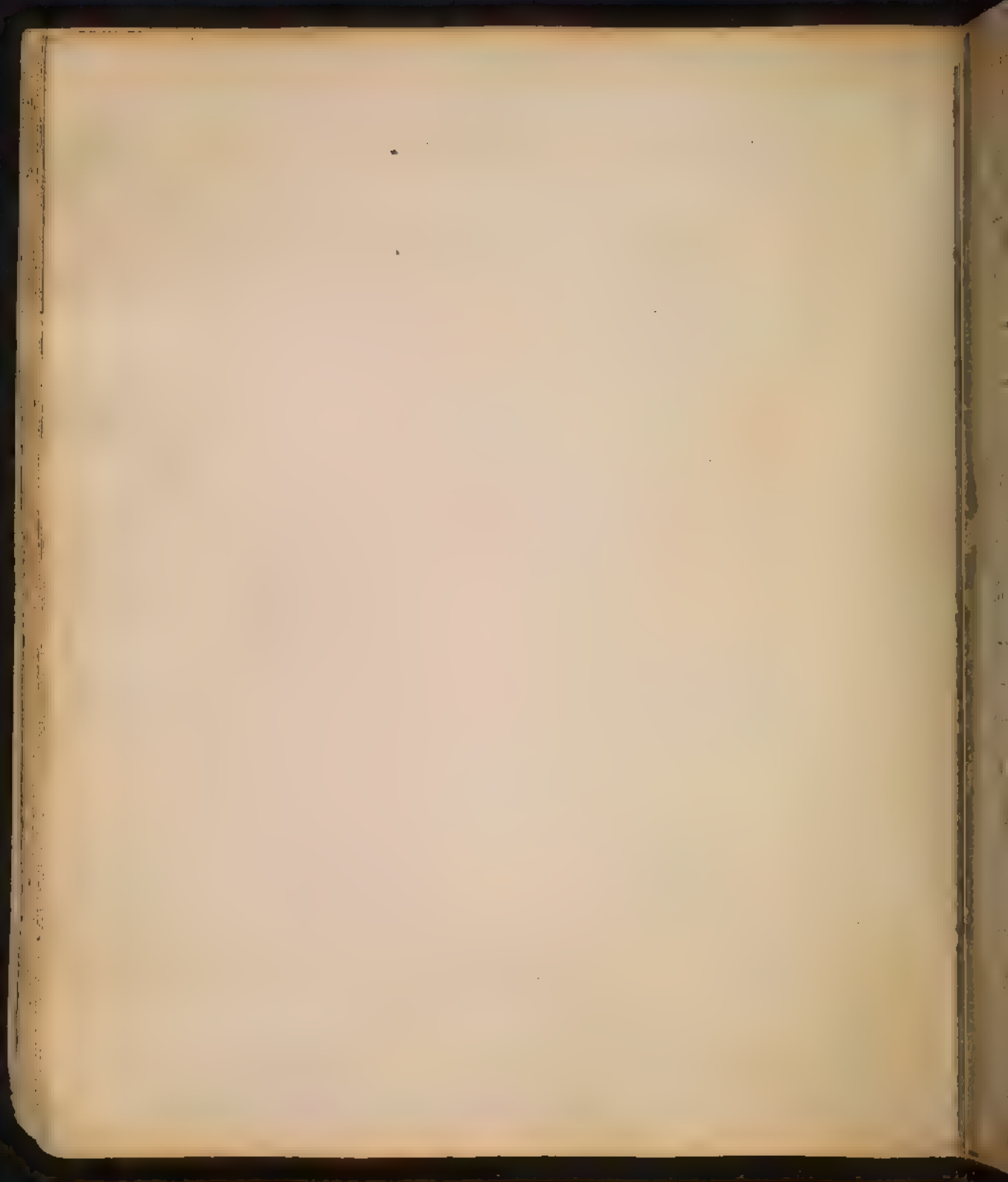
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Stone also absorbs moisture as may be proved by weighing the same stone, both before, and after, it has been ~~used~~; the same may be said of bricks; but it is to be remarked that a wall composed of any of these materials absorbs most moisture, when neither plastered nor painted. + In some parts of England &c. houses are built of mud; and are extremely wholesome, this being warmer, and absorbing more moisture than any of those we have mentioned. — The mud is made into large lumps called cob. Cool in summer, & warm in winter.

+ Besides the direction, large rooms are ~~very~~ comfortable (in winter, the draught of cool air is less felt, having a larger space to act in) & in summer too great a ^{confinement} combination of heat is prevented. + Windows and doors are to be placed opposite to each other, to attract a current of air; the windows contrived so as to open both at top and bottom; that, while the heated air goes out at top, cool air may ^{be}



be admitted at ^{the} bottom. ¹⁶ Every house should
have an entry or passage completely thro' it, from
front to rear, if possible. Where houses can be
built upon a rising ground it is to be preferred.
^{18 inches} ~~and~~ ^{as far as possible} a double wall - ~~useful~~ -
Thick walls, ^{great} ~~repel~~ heat best. A shed, or piazza
projecting from the roof, is comfortable during
the heat of the day. Trees planted about
our houses are of ^{great} ~~inferior~~ service; but, if they
be planted too thick, they will occasion damps
and exhale noxious vapours at night; they
should also be exposed to the sun - These
are useful for the shade they afford, and
for the cooling evaporation which proceeds
from them - They absorb impure air and
discharge pure air. Summer houses, open all
around, with sheds from their roofs, are very
cool. The windows and shutters are to be
kept close ^{but open from 7 till 10 or 11 o'clock.} while the sun shines upon them.
In apartments where there are no windows
opposite to each other fresh air may be ad-
mitted by a ventilator, placed in the door, ^{which}



17.
is an instrument so contrived as to furnish a supply of fresh air while it suffers the impure, or heated air to escape. ^{a war is gas} A high ceiling promotes coolness in suffering the heated air to rise above ^{the hot stagnant air, or opening even it.} us. The most comfortable place in a room is near the chimney, ^{which should be kept open} for, from 8 or 9 o'clock in the morning to 5 or 6 in the evening, there is a current of air setting downwards; and from 6 to 9, ^{in the morning} it sets upwards. — This is owing to the air of a chimney always having the same temperature; hence ~~it~~ when the air ^{is} warmer above than below in the chimney, it descends by its weight; but when the air above is colder, as in the evening & night, the air in the chimney being lighter ascends. A floor of earth, bricks, or marble gives coolness. — There is a curious fan, invented by Mr. Gram, with which a lady may keep herself cool, while sitting in her chair, by the motion of her foot only. — By night — Matresses are cooler than beds: those made of leather are coolest. — Either beds or matresses are cooler if large, because a person may move to the coolest part.

To be bro't under dress
cooling the body by

+ Bring in cool dress - 1 flowing garments -

16) white hat wth black or green lining & 2 bands
- perching in the hat. 2 sitting still - 3 sp^l of
wine to the ears. 4 a narrow entry. Bring in
here the directions of the humane Society, & add
to them Mr Milton house's fact - recovered by from
the languor & want of appetite occasioned by
by excessive heat & fatigue by eating a raw
Beef.

18

Bedchambers should always have a chimney, which, ~~in summer~~, promotes a circulation of fresh air. The chamber door may be left open; but that dangerous practice of opening windows is to be ^{at night} strictly guarded against; for they ~~admit~~ ^{admit} noxious air which arises from fens, marshes, stagnant waters, streets &c. besides the weather may change while we sleep — hence the numerous train of intermitting fevers &c. in Philad^a in autumn. Bedders should likewise always be provided with chimneys for reasons already given. To promote warmth in winter — thick walls, and a low ceiling are very useful; also ^{upper back part of the} carpets for the floors &c. The fire place should project from the wall; and ought to be small with iron backs and sides kept bright to reflect the heat — Closets are best at some distance from the fire; if near it, they should be ^{when we sit near them} kept open, to prevent a supply of cool air coming from them. Raising the feet above the floor, sitting high, and

* It is remarkable that in climates like ours
we suffer more from cold than they do in Canada
or Russia going to the ^{many} conveniences & arts that
are practiced to guard against it.

~~From~~ 6 hours ^{are} for sleep - 2 years gained in
the way.
+ With all the advantages of warmth obtained
from ^{the} beds covering - & the form of a room,

it is sometimes difficult to sleep. This is
occasioned 1 by cold feet. To remove this,

we should either jump out of bed, & stand
a few minutes on a cold hearth - or 2nd

Thrust our feet for a few minutes out ~~of~~ ^{by} ~~the~~
or into a cold part of it. or 3rd have a bottle

or jug of warm water well corked placed
next to our feet in the bed during the night.

11 Sleep is prevented by ^{or an accumulation} an obstruction of
perspiration causing restlessness & tossing from

+ side to side. This disease is called the Cruels.

It is cured & sleep obtained, by 1st jumping
out of bed, & walking once or twice about
the room, or by ^{by} exposing the bed clothes to

19
before the fire; also to have screens behind our
chairs; are all serviceable to promote warmth.
At the side of the fire is the coldest place, because
of a constant supply of cool air coming along the
walls to the fire - In France they keep a
large quantity of ashes on their hearths, which
retain the heat - * By night, a blanket un-
der the sheet, and a bed for a covering are
useful; curtains should not be too close, if used
they are prejudicial, in causing us to breathe the same air
at all; a fire in our bedchambers is liable
to this inconvenience - that it falls away in
the course of the night - when the air
gets cool, and we are very apt to catch
cold. + Bring in here page 25 ab^d floors.
Of fireplaces - stoves &c.

Fire places, as has been mentioned already, ought to
be ^{in the middle of the room} small; projecting from the wall, that they
may the better diffuse their heat to the distant
parts of the room.

Stoves are open, or close - The open stoves here
are

fresh
the Air which have been filled with our
perspiration. 3 by two operations - as in Mr Armstrong
= ted by Anxiety of mind, or a Succession of
new Subjects of reflection. In this case, it is
to be sought for 1st by confining the Attention
steadily for some time to one Subject. - or 2nd by
Counting 100, or 200 backwards, or 3 by think-
ing upon the Virtues of a living or departed
friend. - go to Vol. 3, p. 50.

- pies
+ ~~potatoes~~ - fruit - bread be baked in them
meat - ^{vegetables as potatoes & even}
to great advantage. - Tea kettles boiled ^{expediently} on
or in them by first ^{putting} the kettle on
a Spoonful or two of water - ^{if the water} latent heat,
and undressible

are the Franklins, and ²⁰ Kittenhouses; these are
excellent for reflecting a much greater degree of
heat than could be obtained from ~~the~~ fireplaces
whether lined with clay, bricks, or plates of iron—
besides, that this superior degree of heat is obtained
from a much less quantity of fuel: 1

Close stoves are of various sizes & constructions from
6 to 10 plates— The templated stoves have a
sort of oven in their upper parts, in which cook-
ing of ^{various} ~~many~~ kinds may be performed— These are
more useful ~~in~~ than any of the others; for a
greater heat is diffused by them, tho' at the
same time, 5, or 6, of the fuel will suffice—

Thus it is that the industrious Germans in this
country make a rather saving, of at least £200
^{in the course of a life time} ~~expense~~ in the article of ^{labor} fire wood— There is a
peculiar advantage attending the use of close stoves:
and that is, — a pipe, or funnel, may be carried
across a room, into an adjoining one, or, through
the ceiling into a bedchamber, or other apartment,
above stairs, any of which it will warm sufficiently

+ It has been remarked by Strangers that they suffer more in our winters in Philad.^a than they ever suffered in the winters of Canada, or even Russia. The reason is plain. In those cold countries, ^{where the winters are long,} provision is made by furs & clothes against the cold. In our State, the extreme cold weather is of so short a duration that we neglect to guard ourselves against it by such conveniences.

- The present fashion of having large rooms & entertaining large ~~companies~~ ^{carriages} will make stoves necessary in our Country.

- They cannot be heated without them so as to be safe or comfortable. The sooner therefore they are adopted the better. - + p:27

The fuel used in this Country consists chiefly of wood. Hickory & Oak are chiefly employed for this purpose. The best fires are made of hickory, ~~but~~ and it is said there is most Economy in burning it provided it is not too dry. To prevent this, it should

It has been objected, that these stoves afford a disagreeable and unwholesome heat - I am induced to think the contrary - they are certainly useful in diffusing warmth to every part of a room; and cannot prove injurious, where they are not over-heated, and where there is a funnel to emit the heated air. The Germans, who use them throughout the winter, are observed to be a remarkably healthy people - ^{subject only of} ~~subject only of~~ Sect. 9th smoking chimneys - to Dyspepsia from too much labor & a Vegetable diet.

Smoking chimneys are extremely disagreeable - smoke inflames the eyes - darkens the complexion - and hurts the temper - It stains the furniture, ceiling, and walls, of a house.

Smoke has some weight and will not ascend easily, unless carried up by rarefied air - hence on dull foggy days, in winter, when the air is condensed, we see smoke, instead of ascending, frequently rolling about in sluggish clouds.

not be kept in a cellar, if purchased in the summer. Hickory fires are ~~adaptable~~ necessary for the purpose of cooking to advantage. Split hickory is apt to throw out sparks. To prevent this - take care that the log lies on the fire in such a manner as to throw its sparks upwards & downwards only - for the ^{air} ~~wind~~ which occasions them comes from between the bark and the wood. -

In making a wood fire - contiguity - convexity - & concavity are all three necessary. Where they cannot be otherwise obtained - small pieces of iron thrust in between each piece of wood has been found to be very useful. - An iron bar is useful in preventing the rolling of the wood on the ~~hand~~ ^{hand} - irons. -

The warmest & most agreeable fire is made of a mixture of wood, and large coals. This mixture is particularly useful

hence, also, rooms are ²⁴sometimes smoking before
the fire is completely kindled, but, a large fire
hurries it up, because of the rarified air its
heat produces —

Smoke is occasioned —

1. ~~By the lightness of~~ ^{the lightness of} new houses, preventing
the access of a sufficient current of air; this, in
Europe is cured by a ventilator, or moveable
pane of glass, in the room-door, which ad-
mits a sufficient supply of air.
2. When the funnel, or fire place, is too large,
the air is not sufficiently rarified to carry up
the smoke — It should, therefore, be contracted
to a proper size; the best method of discovering
this size, is to take a piece of pasteboard the
height and width of the fire place; by closing
it with this, and cutting a small hole in
the pasteboard trial may be made whether
it will then draw or not; if it draws the size
is

in cooking. -

a Lin, or steel fender should be used to guard against the danger of the fire's falling or sparks flying into the room after the fire is raked up at night. -

Fire in a room or of cloaths - how extinguished? By stifling it - fact at sea comm^d by maj^r Thence. V

Houses made cold by ^{flom} pipes being ground, & connecting pieces cutting - hence parlours over cellars so cold. quies sh^d be placed close, & lath & between each pipe below - & over it plaster. -

V Shall now add a few directions to prevent either disagreeable or fatal effects of cold heat on the body at in all places. -

1 Of Cold - 1 ~~lawn~~ ^{or Cotton} - woven ^{or} dress - 2 ^{or} exercise - 3 ^{or} keeping the feet warm - ^{large shoes - cork soles - lawn - & salt} Indian practice - 2nd Vandyke's B.

is obtained; if not proceed to cut away more of the pasteboard untill you have gained your end; and then contract the fire place to that size — here, it is to be observed, that the width of chimneys is to be varied, in proportion to their heights — therefore, chimneys in upper rooms should be smaller than those in lower rooms — as they are lower

3. Shortness in the funnel often occasions smoke if the funnel cannot be easily lengthened, contract its width —

4. Two chimneys, where they communicate, are often smoky; there not being a sufficient current of air for both — In this case, one of them must be closed altogether.

5. ^{nighttopping} Tops of houses, or a hill, rising above a chimney, ^{may} turn the smoke downwards by the wind blowing ^{directly} ~~down~~ upon it; as a cure for this, a turncap covering above and on three sides is used —

Best

5 The fast of Isaac. —

1 Setting still — in a shade
2 Heat — 2nd Cool — flowing deep — 3 White
hat — lining with in contact with it — on
handkerchief in it. 4 Sprd of wine to
the ears. 5 Exting. sweat — walking down a hill.
Mr. Bitterhouse — Of actual injury.
Warm petroleum — fresh air — not
too strong a current — 7 The hysterical
fortified by the daily use of the cold bath.
90 p 47 of Vol 3.

+ In a summer's day the heat in St. Paul's
Church London was 62° — in ~~the~~ a common
house 70° — 75° in the shade & 80° in the
sun. In only 10: 43.

But a better method is to raise the chimneys where it can conveniently be done.

+ 6. A door placed too near a chimney gives too great a supply of unrarified air, which causes the smoke to be thrown about the room - The door should be moved, or, at least, the hinges turned next the fire.

+ 7. ~~Smoke~~ from a stack ^{of chimneys} coming down - here a slider must be used to close it entirely.

+ 7th. It will be found, for the most part, that the smoking of chimneys is owing to their being carried up narrower near the top, than below; or zig-zag, all in angles - If a tapering chimney be very high, it is too to one but it will smoke - The air in the room being rarefied, is forced into the funnel of the chimney, and receives from the fire an additional force to carry up the smoke. Now, it is evident that the higher the smoke rises, the less is the force that drives it, the slower



28

slower it must move, and consequently the more room it should have to move in. — therefore, a chimney should be carried up perpendicularly and rather wider above than below.

Of Fire in chimneys.

Every prudent person will endeavour to prevent this, by having his chimneys frequently swept. This might be done by pulling a bundle of straw up and down the chimney, by means of a rope, without suffering boys to undertake a business so degrading to human nature. — If a chimney, nevertheless, should catch fire, the best method of extinguishing it is to prevent the access of air by shutting the windows and doors close, and by stopping the fire place, effectually, with a wet blanket. — Or, half a bushel of salt may be thrown into it; by melting, the alkali will separate from the acid, and glaze, vitrify and calcine the inside of the chimney as it does stone ware &c. — Or, by concussion, as, by firing a gun into it. —

+ The Sweeping of Chimneys is rendered unnecessary & all danger from their catching a fire, by glazing their inside by means of salt ~~and~~ thrown into a large fire as soon as it is built. It becomes so glazy in consequence of this, that no soot will adhere to it. — It has been tried I have heard with success in New Jersey.

+ provided it is ~~per~~ thoroughly dry, otherwise we accelerate its decaying by confining its moisture. —

29

In order to guard against fire, in houses, at night,
it is necessary to shut the doors, windows, &c. close,
~~in order~~ to prevent the access of air, which is
the great supporter of flame — Mr. Fisher's
fact. — +

Vaults and Cellars have always an equal
temperature of air — hence a cellar is the best
place to preserve wines &c. in summer, and vegeta-
bles in winter. Cellars with chimnies keep victu-
als from moulding, by promoting a circu-
lation of air. Danger from animal and. Horse manure
to! A tower. Bath
Preservation of the wood of a house

Wood is preserved, by letting it ^{perfectly} dry before building,
else its moisture ferments and rots, it — painting
is useful to prevent its absorbing moisture, it
will last five times as long, when painted as
it would otherwise. — Posts which are to be
placed in the ground, or beams in building, are
better to have their ends burnt, or covered with
resin, before they are used.

+ Great care should be taken not to sit,
or sleep in room that has been washed,
till it is perfectly dry. ^{Cold} ~~Cold~~ and fevers
have often been produced from neglecting
this precaution. ... also not to sleep in a
room recently plastered - Vanswieten tells of
a palsy from it, & Dr B Morris got a Consumⁿ
from it.

Walls are preserved by plastering, and weather-boarding, which keep the walls dry, by preventing the access of moisture. Roofs preserved by painting, when wood ~~But tiles best.~~

Of rendering a house clean & wholesome.

This is a most essential part of good housewifery and cannot be too much attended to. Washing frequently in a warm season is very conducive to ~~both~~ cleanliness, and, consequently, to health. — (So generally is this practice approved of, that, in this city, one day in every week is set apart for it.) Plastering, and whitewashing, are extremely necessary. — The celebrated Mr. Howard, who has visited a greater part of all the prisons in Europe, with a view to ^{point out} the means of lessening the ~~human misery~~ ^{human misery} sufferings of the ~~unfortunate~~, remarks that in those prisons where whitewashings were performed two or three times a year, diseases were rarely found. — Opening windows in the day time discharges impure air. Ventilators are very

Dr Rogers relates a fact of rotten cabbage
leaving one produced a fever at Oxford
from putrefying near ~~the~~ one of the Colleges.

x providence having made these animals which
inhabit ^{& men} stables necessary to each other, he has
kindly prevented any inconvenience ^{or disease} from
their being so near each other. -

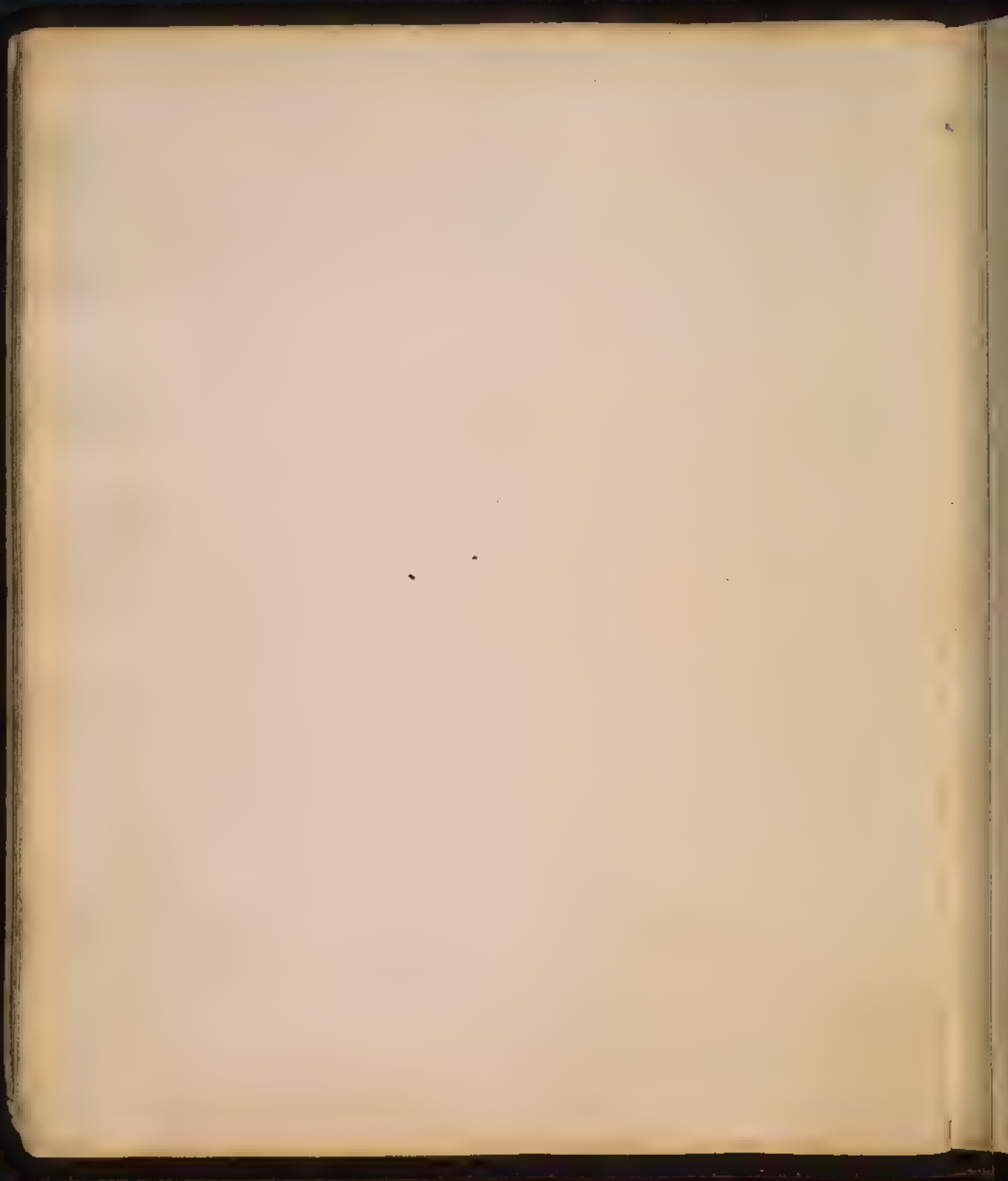
very necessary, for this purpose, especially, where many people are assembled together. — Offal matters, especially, the refuse of vegetables, should not be suffered to remain near a dwelling house;

there, when putrid, emit very noxious exhalations.

A Ship sailed from England to Portola, thence she returned to England; and made a second voyage to Portola: during all these voyages a quantity of potatoes were suffered to remain in her hold, which by this time were completely putrid; and, of ten sailors, who went down into the hold, ^{contracted fevers of which} ~~more~~ ^{all died} ~~were not~~ ^{contracted} ~~restored~~ ^{fevers of which} ~~death~~; owing to the noxious effluvia of the putrid potatoes.

The effluvia of stables, however, seems to be an exception to these remarks. — When contagious distempers were raging in different parts of this city, the people who lived near stables have been exempted from sharing in the general calamity.

~~The breath of these animals, also, is wholesome; whereas, that of human beings is exceedingly impure.~~



32
To prevent, or destroy insects &c.

Insects doubtless were designed by Providence to answer some useful purposes. I certain it is that they are standing monuments of the fall of man: they tell us that we have forfeited our right to the earth; and that, while we are in this world, we are in an enemy country. They serve ~~also~~ to exercise our humanity, and patience; and to promote cleanliness. — Whenever they injure us, however, we are justifiable in destroying them, by the principles of ~~war~~ self-preservation.

Mosquitoes are produced from stagnant waters, rain water kept for washing, in vessels, in our yards, is very apt to produce them. — the vessel should be covered — or a few fishes put into the vessel will feed on them and their eggs. —

Flies are the offspring of filth — hence they abound most in dirty houses, where they are very useful; by consuming impure matter, which might cause diseases — They are also food for singing birds — They feed on fruit, and are found in swarms where

† They may be drove out of a bedroom
by a napkin - or kept out of it by
keeping the room
~~dark~~ during the day.

where there are many fruit trees — The best method of destroying them, is to put some molasses on a board, to which they will repair in swarms; a little gunpowder exploded under the board will destroy them — [They are sometimes poisoned, by mixing fly stone in water. § 6. +]

Bugs, which are so troublesome about our beds, in the summer months, are best prevented by cleanliness — some paint their bedsteads, and place the bed posts in plates of water — but, it is better to wash the bedsteads with a solution of salt and water, boiling, which will destroy them effectually — for they cannot live a moment in salt — This solution also destroys worms in children —

Devotion of *Trametes* like wise powerful.
Rats and mice are, frequently, found in old houses; they, therefore, tend to us that our houses stand in need of repair — They may be destroyed —
 1st by traps, which take them either alive, or dead; every humane person will prefer the latter, as it prevents the disagreeable task of putting them to death ourselves —



2. Cats destroy ^{rats & mice;} ~~vermin~~; for this purpose they should be fed very sparingly, as they hunt best when hungry.

3. Rats are sometimes poisoned with arsenic, or ratbane; this mode of destroying them should never be practised - it is extremely dangerous to children, who may come at it, and poison themselves; besides, the effluvia of rats, that die in their holes is very noxious, and never fails to taint a house. —

If humanity revolts at putting them to death, we may rid ourselves of them; by banishing them thus -

1st Catch one alive, hang a bell round its neck, and let it go - they will all immediately be terrified, and quit the house. or

2^d They may be banished, also, by shaving or singeing the hair off one of them -
of lightning and thunder.

These are synonymous terms for one and the same thing - when near, ^{there is} no perception of time between them; and the reason of seeing the flash at other ^{times}

+ "And harmless all your thunder views,
" ~~and~~ By sticking to his point.

+ The King of Britain placed conductors th balls on his stables in London during the late war, but upon hearing that a house had been struck by lightning with these newly invented balls, he instantly took them down, & replaced them with sharp pointed conductors. Upon which the following lines appeared in a London newspaper.

"While you Great George for trifles hunt,
"And sharp Conductors change for blunt,
"The Nation's out of joint;
"Franklin, the wiser plan pursues, +

times before we hear the noise of the explosion, is that
the motion of light is almost instantaneous; whereas,
sound moves only at the rate of 1142 ^{feet} in one se-
cond of time (according to Sir Isaac Newton) - Thunder
is occasioned by two clouds, called plus and minus - or
+ the greater and the less; the former greater in trist
and ⁱⁿ electricity than the latter. When these clouds
come near to each other, the lesser, by the principles
of an equilibrium, attracts the electric fire of the other;
which occasions an explosion, of the large one, at
each discharge of matter - When no small cloud
is near, a mountain, a tree, or house &c. will attract
this matter - In order to guard our houses against
the bad effects of lightning; we should use Doctor
Franklin's conductors; ^{to carry it silently off to the earth:} these are iron rods with one
end in the ground and the other reaching a little
higher than the ^{top of the} chimney; the point is to be sharp
and tipped with brass to prevent its rusting - in England
balls have been placed on the top; but they did not an-
swer the purpose * Lightning is conducted by metals of
every sort; but not by glass - Where

Where there is no rod, ³⁶ avoid sitting near a chimney,
door, or window, for these also conduct lightning—
the safest place, is near the middle of the room, ^{on}
of one a feather bed—
Trees, also, and every other object that may attract
lightning are to ^{be} avoided in a thunder storm. The
brutes in a storm of this kind shun trees &c. as if by
instinct.

very,

you

on

with

A

The

by

The Twelve Signs.

- ♈ *Aries*, or the Ram.
 ♉ *Taurus*, the Bull.
 ♊ *Gemini*, the Twins.
 ♋ *Cancer*, the Crab.
 ♌ *Leo*, the Lion.
 ♍ *Virgo*, the Virgin.
 ♎ *Libra*, the Balance.
 ♏ *Scorpio*, the Scorpion.
 ♐ *Sagittarius*, the Archer.
 ♑ *Capricornus*, the Goat.
 ♒ *Aquarius*, the Waterbearer.
 ♓ *Pisces*, the Fishes.

Multiplication Table.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	-	9	12	15	18	21	24	27	30	33	36
4	-	-	16	20	24	28	32	36	40	44	48
5	-	-	-	25	30	35	40	45	50	55	60
6	-	-	-	-	36	42	48	54	60	66	72
7	-	-	-	-	-	49	56	63	70	77	84
8	-	-	-	-	-	-	64	72	80	88	96
9	-	-	-	-	-	-	-	81	90	99	108
10	-	-	-	-	-	-	-	-	100	110	120
11	-	-	-	-	-	-	-	-	-	121	132
12	-	-	-	-	-	-	-	-	-	-	144

Money.

£. s. d. q.

1—20—12—4

Avoirdupois Weight.

T. C. Q. lb. oz. dr.

1—16—12—16

Troy Weight.

lb. oz. dwt. gr.

1—12—16—24

Apothecaries Weight.

lb. oz. dr. scr. gr.

1—12—8—3—20

Wine Measure.

T. P. H. G. Q. P. G.

1—2—2—6—4—1—4

Long Measure.

D. M. F. P. T. Y. I. R.

1—60—12—3—4—12—3

360 Degrees are the circumference of the Globe.

Land Measure.

A. R. P. T.

1—4—40—5

Dry Measure.

B. F. G. P. Q. P.

1—2—2—2—1

Cloth Measure.

Y. Q. N. In.

1—3—4—1

Time.

Y. D. H. M. S.

1—365—12—60—60

Thirty days hath September,
 April, June, and November;
 February hath twenty-eight alone,
 All the rest have thirty-one.

* Twenty nine, every 4th or leap year.

Numeration.

Millions.	Thousands.	Hundreds.	Tens.	Units.
C X	C X	C X	C X	C X
9 8 7 6 5 4 3 2 1	3 0 8 2 1 4 6 8 0	2 0 4 6 8 0 9 5	4 0 2 5 3 0 0	8 2 0 7 5 3
				6 0 0 9 8
				5 0 0 1
				7 0 0
				9 1
				4

Pence Table.

d.	are	d.
20		1 8
30		2 6
40		3 4
50		4 2
60		5 0
70	are	5 10
80		6 8
90		7 6
100		8 4
110		9 2
120		10 0

Numerical Letters.

1 5 10 50 100 500 1000
 I V X L C D M.
 MDCCLXXXVII.

BOOK.

Printed for ANDREW BROWN, Principal of the Young Ladies' Academy.

3 FOR THE 10 3
YOUNG LADIES' ACADEMY,

Y 2

7395 Near St. Paul's Church, in Third Street, Philadelphia.

F 14

HEAR, ye children, the instruction of a father; and attend to know understanding. Wisdom is the principal thing; therefore, get wisdom, and with all thy getting get understanding.—Exalt her, and she shall promote thee; she shall bring thee to honour when thou dost embrace her. She shall give to thine head an ornament of grace; a crown of glory shall she deliver to thee.—Prov. iv. 1, 7, 8, 9.
If sinners entice thee, consent thou not.—Prov. i. 12.

To write a free and legible hand, and to understand common arithmetic, are indispensable requisites.—*Mrs. CHARON'S Letters.*

Though well-bred young women should learn to dance, sing, recite, and draw, the end of a good education is not that they should become dancers, singers, players, or painters; its real object is, to make them good daughters, good wives, good mistresses, good members of society, and good christians.—*Mrs. WOLFE'S Essays.*

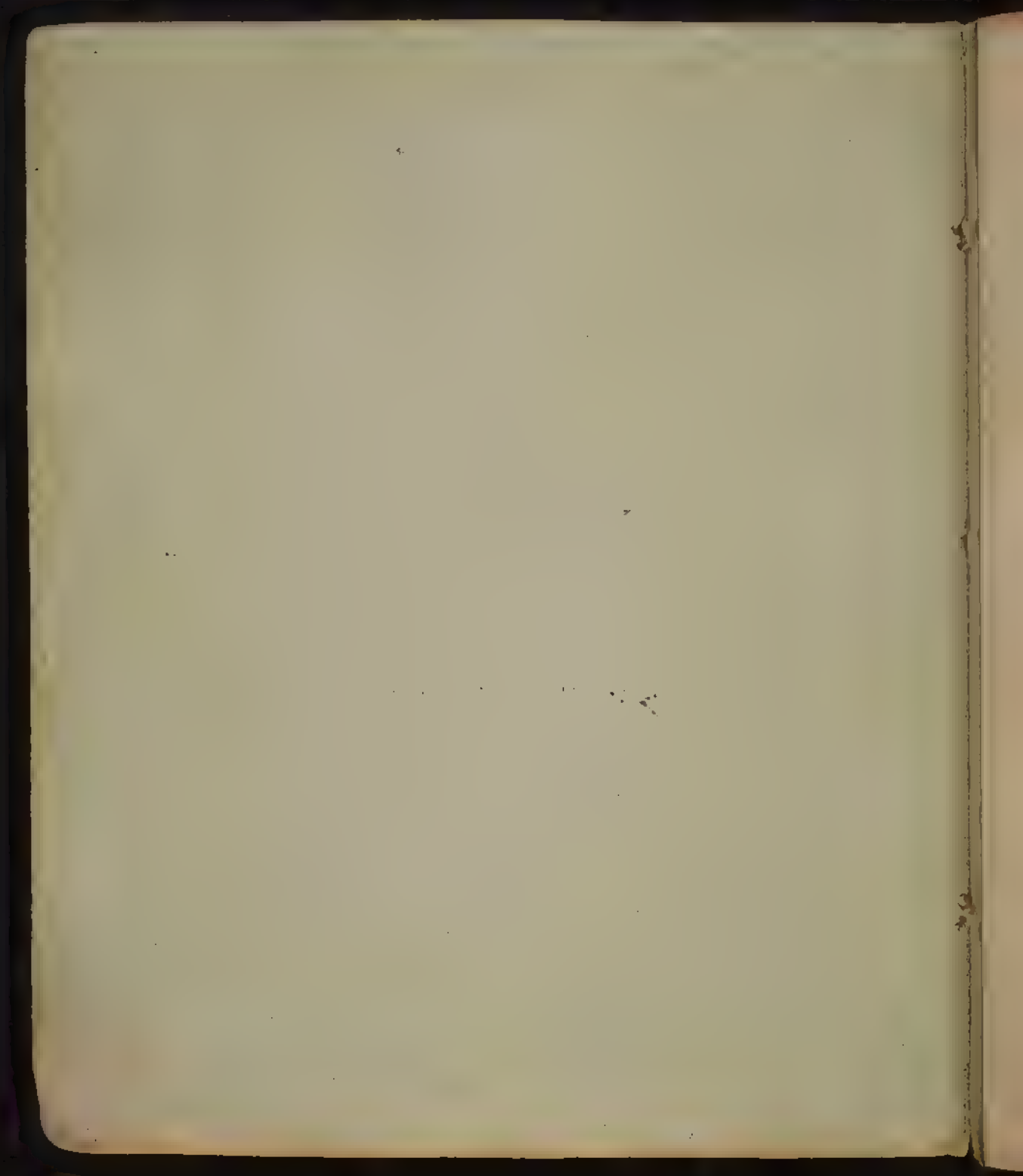
If your endeavours are deficient, it is in vain that you have tutors, books, and all the external apparatus of literary pursuits. You must love learning. If you intend to possess it. In order to love it, you must feel its delights; in order to feel its delights, you must apply to it, however inanimate at first, closely, constantly, and for a considerable time.

Pleasant, indeed, are all the paths which lead to polite and elegant literature. Yours, then, is surely a lot peculiarly happy.—Value duly the opportunities you enjoy, and which are denied to thousands of your fellow creatures.

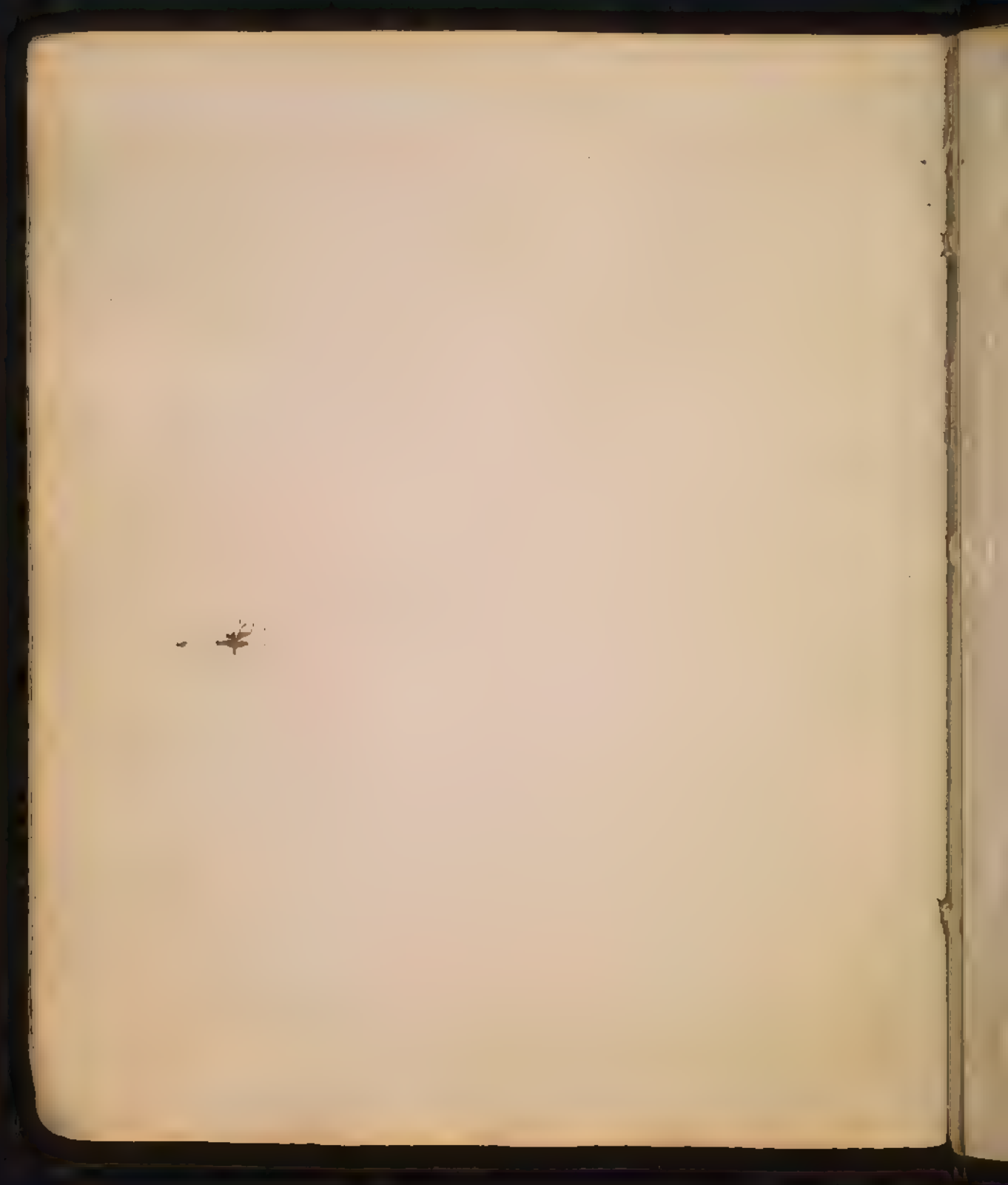
Without exemplary diligence, you will make but a contemptible proficiency. You may pass through the forms of schools—but you will bring nothing away from them of real value. Your instructor may, indeed, confine you within the walls of a school, a certain number of hours. He may place books before you, and compel you to fix your eyes upon them; but no authority can chain down your mind.

That learning belongs not to the female character, and that the female mind is incapable of a degree of improvement equal to that of the other sex, are narrow and unphilosophical prejudices. The present times exhibit most honourable instances of female learning and genius. The superior advantages of boys' education, are perhaps, the sole reason of their subsequent superiority. Learning is equally attainable, and, I think, equally valuable, for the satisfaction arising from it, to a woman as a man.—*Knox.*





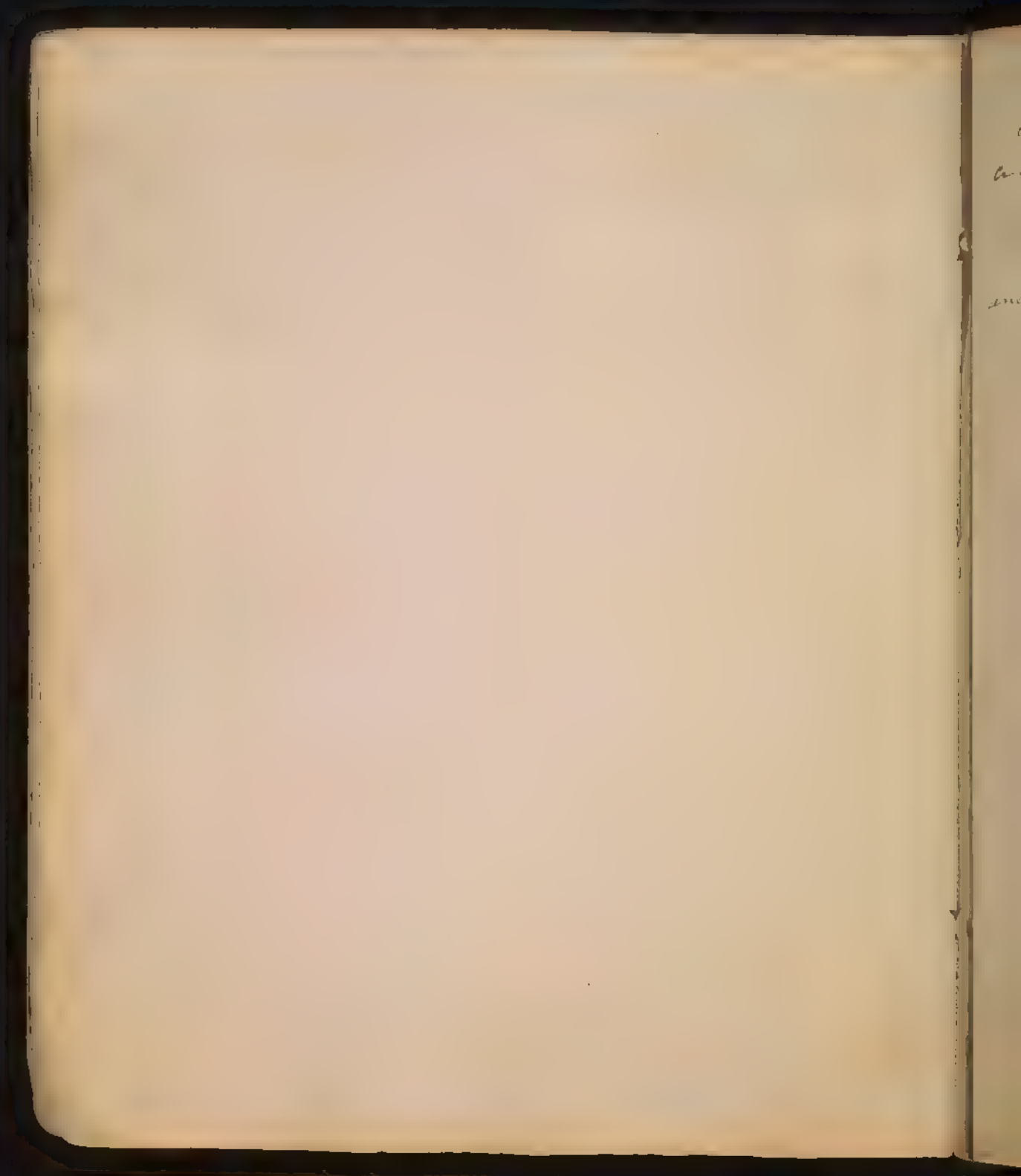




It is to be lamented that kitchens are too often the receptacles of dirt; and, what is worse, of vice. To prevent a communication of both, it has been recommended by some to have the kitchen at a considerable distance from the dwelling house. This, in large families, and in the present state of ~~civilized~~ society, in this country, is impossible. If they are to be kept out of sight and hearing, the best place, in towns, is under ground: if they be under the parlour, some springy body, as ~~rubber~~ or straw, may be placed under the parlour floor, to prevent the passage of sound. If they be receptacles of dirt, vice, or ill manners, children should be carefully kept from them; for, vice, in a particular manner, like knowledge is increased by being propagated.

But is there no way of preventing this dirt, or vice? Are our servants to be abandoned to destruction and ruin? — No —

Our



[Our servants, to use the words of Lord Chesterfield, are
 "our unfortunate friends" — Or, ~~to use the words of~~
 a higher authority, ~~our~~ ^{our} brethren.]

There is one, and but one,
 method of preventing the disorders of a kitchen
 — ^{and that is by} the presence of a mistress. — The tongue, eyes,
 and ears of a mistress in her kitchen ^{are} an effec-
 tual remedy for all disorders; It is inconceiva-
 ble what good effects would be produced by
 a lady visiting her kitchen two or three
 times a day — It would promote economy,
 and by that means give a wife a complete
 influence over her husband; for certain it is,
 that a man will love that woman most,
 whose affection for himself he feels, every time
 he sits down to a meal, or puts his hand
 in his pocket.* Attention of this sort will defend
 liberal and extensive knowledge from censure; for
 among the various illiberal reasons which ^{have}

* see Solomon's character of a virtuous woman — Prov. XXXI. 10.

The principal design of Drap is to defend
us from the inclemencies of the weather.
particularly heat & cold. — I shall
~~+ last we present a warm in winter~~
~~to~~ briefly mention the means
of Obviating 1st Cold — & 2nd Heat col. 2
/225-

have hitherto been given ³⁹ for neglecting the education of ladies, one has been — That a liberal education renders ladies inattentive to domestic duties — How praise worthy then would it be in such ladies to shew, by their conduct, that this remark is not only illiberal, but also ill-founded — A kitchen should have an oven; it should also have a floor of brick, or stone, to prevent danger from fire — a pump, or well; a milk-house, and a wash house, should likewise be near it — Ice houses, in which ice &c. may be preserved in the heat of summer, must be deep in the earth, and defended, from the heat, by hay, straw, or some other spongy body.

Of Dress. +

Woollen clothes are liable to be cut by moths in summer — to prevent this — mix some tobacco leaves, cedar shavings, alspice, or camphor, with them — Or, what is a better method

+ Shoes & boots to be dry & warm -
Capt Miles's receipt -

40

pack them in trunks, or chests, and place them in the cellar, the dampness of which will preserve them, or they may be kept safe by wrapping them in linen — Woollen and cotton clothes are most healthy.

it were to be wished that the people of this country would be more careful in changing their light summer dress, for garments of woollen, ~~or cotton~~, at the first change of the weather, in the fall of the year; a numerous train of diseases might be prevented by such precaution.

Linen clothes are not so healthy; being liable, ^{when old, or dirty, to preserve} to become putrid, ^{diseases} with the exhalations from the skin — +

Silk clothes are very durable: when they become old they may be carded and spun over again: hence, there is great economy in using them.

Hairs, in clothes

Grease may be taken out of them with chalk and water and a hot iron; this, however, will spoil dark colours — therefore, it is better to use an

The stain of ink may be taken out
+ ~~ink~~ by new milk — [Mrs Archer] &
by dipping the stained part in a piece
melted tallow candle, & then throwing it
into the washing tub. It will come
out clean. go to Reeps p 19. 2

aromatic oil, as spirits of turpentine; by rubbing the stain with this, the grease will be rendered volatile and will evaporate with the turpentine.

Stains of red wine, cherries, &c. may be washed out with Madeira wine; or, by salt dissolved upon the stain, by the steam of boiling water, from the spout of a ^{tea} kettle.

Iron moulds may be taken out by means of a muriatic acid obtained from common salt. The acid must be ^{well} diluted with water, or it will corrode the linen. + Of furniture.

Plate vessels are the best and most durable; no common acids having any effect upon them: there is great frugality in the use of them, because of their duration; and, if, at any time, we should wish to have vessels differently fashioned, a small sum of money will procure the exchange. Vessels of iron, tin, or copper, when plated, answer very well; besides, we can easily change them as the fashion changes.

copied

Copper and brass vessels ^{are} acted upon and corroded by acids, syrups, and alkalis - hence they are dangerous, if not tinned - The action of acids upon these produces verdigrise, around that part to which ^{air has} access - hence, the bottom of vessels are less acted upon than that part above the surface of the liquids.

+ pewter mugs plates &c. are very safe - there is great economy in using pewter plates - they are cheap, not easily broken; nor do they spoil knives, as china, and earthen wares do - I am apt to think that having tried other metals, wares, &c. we will have recourse to pewter once more.

Iron vessels are very durable, and may be used with safety - tho acids, of every sort, and even water act upon it: yet, no injury arises from it; the tincture being rather wholesome than otherwise. Tea kettles, and pots, of this metal are very fit for use.

43

China ware is made of a ^{fine white clay} stony earth and called by the Chinese petunse, and kaoli; enamel of melted tin gives it transparency: the painting of this ware in China is chiefly done by children under twelve years of age. This ware is very safe and handsome; there is, however, one objection to it, that it is easily broken. —

Glass is made of sand and an alkaline salt; to make white glass these must be mixed with a little lead. In making wine glasses the top is first formed: the curves in the shank are made by putting an enamel on it and twisting it around when soft. This ware is not acted upon by any solvent in chemistry — not even by aqua fortis, or the vitriolic acid: hence it is used with the utmost safety.

Earthen ware of every sort as delft stone, queen's ware &c. are glazed by a solution of calx of lead in water, which vitrifies the clay. Vessels glazed in,

+ Earthen ware - China & glass mended by
Raunder's powder - being boiled in milk will
be tied together - & by a paste made of the white of an
egg & unslacked lime - also a glaze
obtained from wheat by a process
described by Fourcroy.

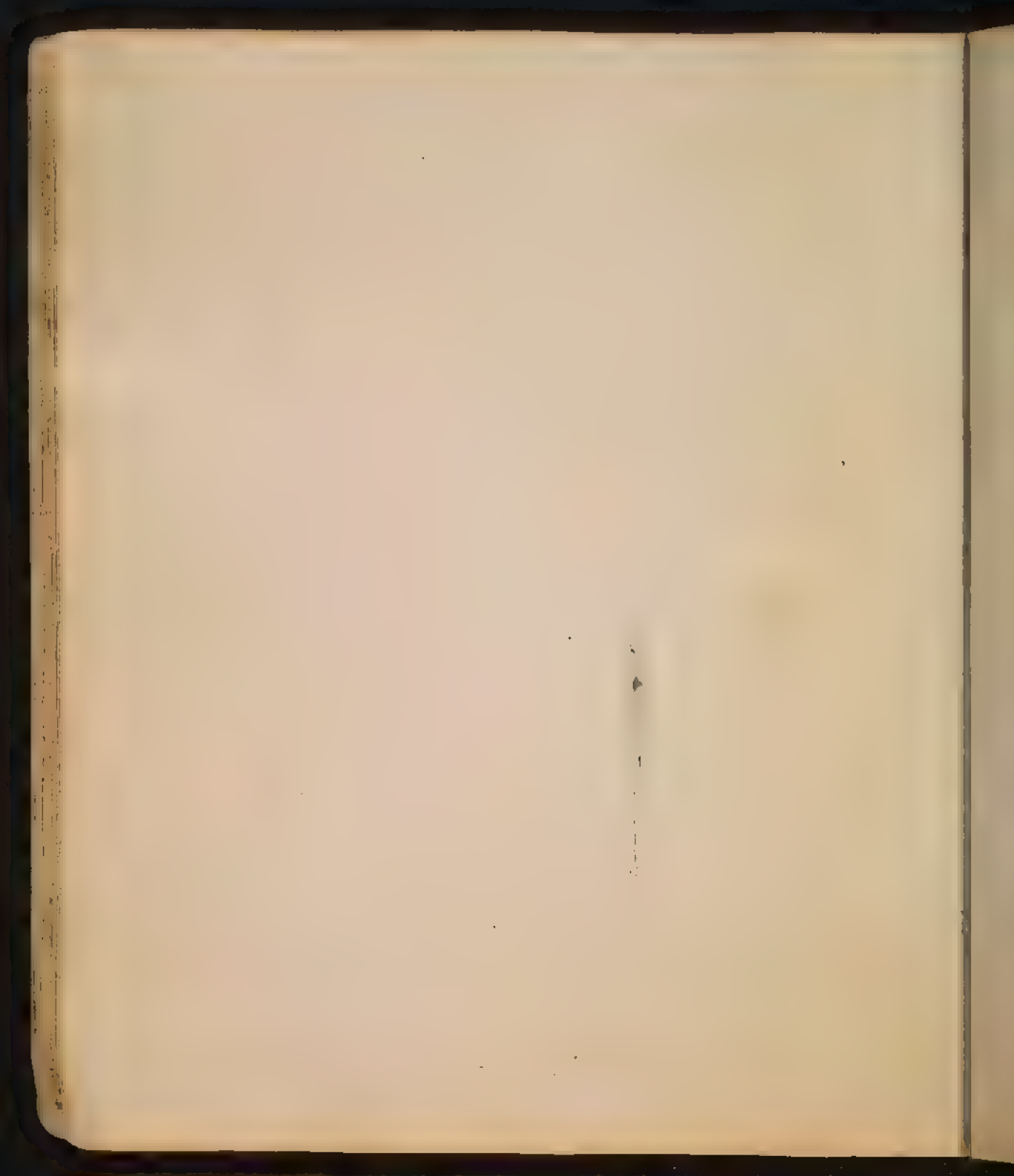
in this manner are dangerous and not fit for use.
for acids dissolve lead and the solution, tho' sweet,
is poisonous. In Devonshire, in England, where
they make and drink much cyder. the people
were for some time afflicted with a violent griping
^{disorder} in their bowels, called the Devonshire chol-
ic; this they at length found was occasioned
by drinking the cyder which had ran thro'
leaden pipes — +

Looking glasses are rendered capable of reflecting
the rays of light, by covering over one side of
them with an amalgam of tin foil and mercury.

Pictures are painted upon canvass, wood, glass, or
metals — with crayons; or in oil colours; or ⁱⁿ water
colours —

Prints —

Busts are made of plaster of Paris, ground, diffused
in water, and cast; either at full length, called alto
reliefs; or, in part, called basso reliefs



45

Beds sheets &c. should be well aired daily to discharge perspired matter which is much phlogisticated and exceedingly impure. This will be evident by taking a burning candle between the sheets, any morning, which have been lain in all night; for unless fresh air be admitted the flame will be immediately extinguished.

Washing should be performed with soft water such as rain or river water. It is generally used warm - but some articles are best washed in cold water. Soaps of various kinds are used in this operation of which I shall speak presently.

Bleaching is done by the heat of the sun, a fixed alkali as potash, and soft water. It might be done by the steam and water; but better with the assistance of the alkali which ^{dissolves and} takes off the vegetable filth &c. from the cloth -

Ironing is done to smooth, or as it were to polish, the surface of linen &c. This is performed with hot irons: great caution should be observed in putting the hands into cold water, when they are heated by this exercise: there have been instances of some dying in a few hours by this inconsiderate act -

2
Soap is made of oil, or ^{fat}, and an alkali obtained from ashes - This is hardened by common salt which abstracts the moisture, or rather the water of the lye - Castile soap is composed of oil of Olives and a fine fossil alkali.

Starch is obtained from wheat, and sometimes potatoes, fermented for two or three weeks, and then strained and washed.

Blue, which is used to prevent yellowness in clothes, is procured from indigo.

Dyes. By means of these we are enabled to procure beautiful colours, in imitation of the works of nature; they, also, preserve many things, like paint.

There are seven original, or primary, colours - violet, indigo, blue, green, yellow, orange, and red - The initial letters of which, to assist the memory, are contained in the words - vib. ind. leg. or - These colours exist not in bodies; but, in the rays of light derived from the sun; and the different bodies appear of their respective colours by reflecting these rays.

& likewise be put on on damp days, or
cold evenings in summer. The great
secret of preserving health from changes in
the weather is to accommodate our dress
to them. — ~~It is~~ not eaten by insects
— proper for winter & summer — very
wholesome.

Woolens are liable to be ^{eaten} by
moths. —
In Canada they preserve their fur cloaths
in their close stores — which are made
of iron. Mr. Gibson used to preserve his
woolens in ^{empty} barrels in a cellar.

Moths never touches cloath? made of
vegetables. — does like to wool — & fur
They may be further preserved by
Tobacco — Camph^r Cedar shavings — or
Alspice, or by being wrapped in
butter. — go to. Harris p: 40

The colours of bodies ^{47.} arise from their dispositions to reflect one sort of rays, and to absorb others.

Such bodies as reflect two or more sorts of rays appear of various colours. Hence, the whiteness of bodies arises from their disposition to reflect all the rays of light promiscuously— And, the blackness of bodies proceeds from their incapacity to reflect any of the rays of light— From hence it arises that black bodies, when exposed to the sun, become sooner heated than all others.

Cloathing is made of Wool. ^{Wool} Cotton ^{Wool} Linen & Silk. Wool excellent in variable & moist climates - next to the skin. Cotton, not liable to be worm eaten, & suits all its seasons. Linen less wholesome than Wool or Cotton. Silk wholesome & durable. May be dissolved in a caustic alkali. In this way gold & silver may be obtained from Calce.

Woolen clothes should be laid aside in our climates ⁱⁿ the 1st of June, & put on again on the 1st of September. - They should

+ Bring in Lewis' recipe.

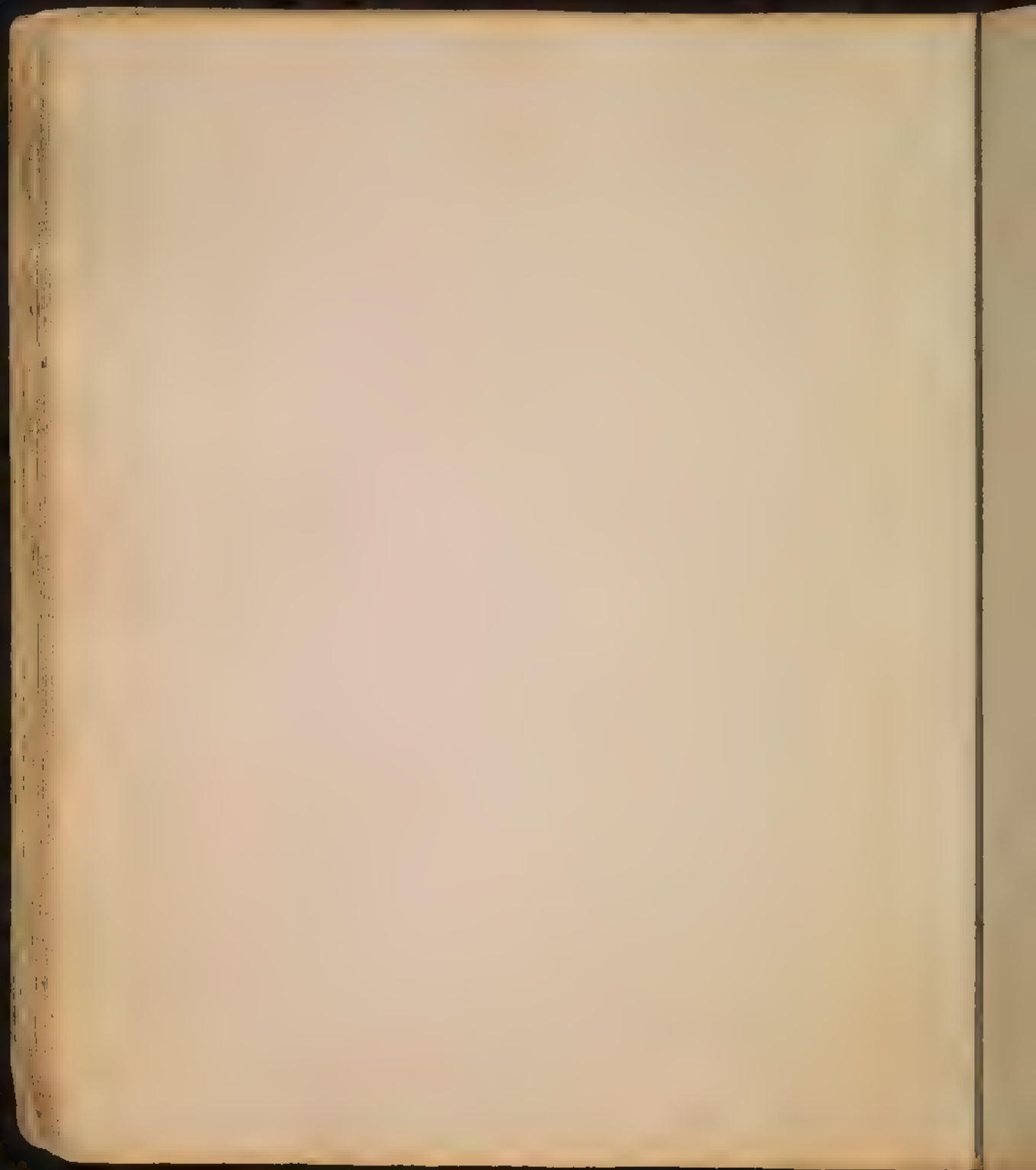
28

Clocks and jacks, with a variety of other engines, are joined by a knowledge of the mechanic powers, which have been happily discovered, to increase the powers of man, and to lessen labor. Clocks & Jacks, move by means of weights, or springs, and sort of jacks perform their motions by means of smoke.

Lamps are of various kinds - The best now in use, is the new fashioned lamp which consumes its own smother and has several plates, which make it to reflect the rays of light better than any other. One of these lamps gives as much light as eight candles.

Candles are made of spermaceti, tallow, bees wax &c. Their wicks of cotton, or tow; the best wicks are made by mixing cotton and tow.

Quills - When quills are oily, pens made of them will not let down their ink freely: boiling quills in lye will deprive them of their oil. ^{to be kept in lye or not according as the quill is hard or soft.}
Ink - black ink is made of an astringent vegetable; as white oak galls, green vitriol and soft water - cloves preserve it, sugar is not fit for ink - g.



49

In China pigments are used for ink. — They
roast and powder rice: this they dissolve in wa-
ter, and write with brushes. — Ink generally
gets blacker after it has been written with, by
the evaporation of the water it contains. —

Sympathetic ink, which is used in private
correspondences may be obtained by writing
upon paper with a solution of saccharum satur-
nisi; this writing, when dry, will disappear;
but will immediately become legible, and of a
brownish black, by holding it near the mouth
of a bottle containing volatile tincture of
sulphur, or Essence of Sulphur. — or a solution
of Opium (which is arsenic & suspensum)
in lime water. — The phlogiston emitted
from these substances reduces the calx of the
lead, and thus restores to it its natural dark
color. . . .

+ Proper time for Budgeting - Injury of
Night Studies from diminution of the fresh
air of candles - Low fresh - Loss of citability ---

Bitte die Frau befragen, evtl. erlöblich.

50

Paper, is obtained from rags beaten, & boiled into a pulp. They are then taken out into a machine like a sieve thro' which the water flows leaving the paper behind. This is taken out of the mould or machine, & pressed between flannels till it is dry. It is afterwards sized, or glazed.

Books are composed of a number of sheets of paper bound together (for the mode observed in printing books, see a printing-office). In reading & writing avoid missing the light in front - raise the book to prevent the fatigue of the eye - to stand to avoid pain in the breast. +

Thermometers are instruments to measure the degrees of heat. When the mercury stands so low as 32, or under, we have ice; at 62, or under, fire beyond 80 heat is oppressive. becomes necessary; at 96, and from that to 100, the heat of our atmosphere is equal to that of the human body; from 110 to 120 it is feverish.

Barometers serve to shew the gravity of the air, and are, therefore, useful in predicting changes of the weather - in damp weather the air is light; in clear weather it is heavy.



Means of preserving beauty

Beauty depends upon shape, teeth, and complexion.

1. Shape— The line of beauty is an erect posture— tight lacing spoils the shape, and impairs the health. The simplicity of our Quaker ladies' dresses is worthy of imitation.

2. Teeth may be preserved and set in graceful order by employing a dentist for that purpose; nor can any money be better laid out, than in the preservation of our teeth— it is best to have them nearly touching each other. They ought to be cleansed, frequently, in the mornings and after meals with a brush and cold water; so soon as teeth are decayed by the tooth-ach &c. they should be immediately drawn; or they will affect the others by sympathy. Washing the mouth, and behind the ears, every morning with cold water is of ^{great} ~~infinite~~ service to preserve teeth, health, and complexion.

(Decay of the teeth is occasioned by a changeable climate; it is therefore prudent to sleep ^{with}

Just before going to bed is the best time for brushing
the teeth, they then remain perfectly clean for eight or
ten hours, which not only preserves the breath, but
renders the appetite more keen for breakfast, by pre-
venting that disagreeable taste in the mouth, which
is frequently observed in the morning, after having
eaten some particular things, especially cheese.



METHOD of Preserving the Beauty of TEETH.

From a Letter of Dr. Mitchell, to ———.

SOME experiments which I have made upon human teeth by calcination and solution, convince me that they contain, particularly in their outer coat, or covering, a large proportion of CALCARIOUS EARTH. This incrustation is secreted by the arteries of the teeth, and regularly deposited all around, to defend them from outward accidents. When it is corroded or worn off, and the naked bone exposed to the operation of air, spittle and aliment, the diseased teeth soon corrupt. While it remains unhurt and entire, they generally continue useful and ornamental. But what avails the knowledge of these facts, unless we gain some *practical advantage* by them? From these facts then, we may learn, that the enamel of the teeth, which is so remote from the influence of blood and nerves as to be nearly allied to inanimate matter, is, like chalk, egg shells and marble, readily acted upon by ACIDS. Whence a sufficient reason appears, why very tart apples occasion, soon after eating them, a sort of soreness or unpleasant sensation in the teeth; why the frequent use of sharp vinegar in pickles and sallads is injurious; why lemon juice and tamarinds are also destructive; why spirit of vitriol is still more ruinous; and why loat and tartar, employed as dentrifices, by the acid they contain are often productive of irreparable mischief — as likewise why young folks who indulge the pernicious habit of chewing allum, damage their teeth excessively. — Hence too, we may further learn, that the best way to prevent their decay and loss, is to wash them frequently with PURE WATER and wipe them clean with a soft towel, and neither *chemically* corrode them with vegetable and mineral acids, nor *mechanically* wear them away by scouring with hard and gritty powders.

Does it now seem at all wonderful, as people are accustomed to take so many hurtful substances into their mouths, that the teeth suffer detriment thereby? Is it not rather matter of surprise, considering all these things, that many have any teeth left? And is not your question, 'why are bad teeth so common,' in a good measure answered? — So far, therefore, as the present subject extends, the preservation of BEAUTY depends upon a sure and certain principle, easy to be understood and followed. As to that harmony of shape and features in which the remaining part of beauty consists, the pious Mr. Lavater thinks it is inseparably connected with moral excellence; I shall therefore only add, in the sentiment of this most able physiognomist, that "The way to be handsome is to be good."

handkerchiefs, long handkerchiefs, all-white possums, 1-2
yard and 1-2 ell farthings, black modes, sewing silks,
black and white lace and edgings, lawn and cambrics,
white and coloured threads; a handsome assortment
of mens and womens worsted, cotton, and silk hose-
ry; 7-8 and yard wide Irish linens; Scotch shirting;
bedticks; diaper and tablecloths, buckrams, tapes,
pins, needles, &c. &c. &c.

N. B. Flaxseed, Pot. Ash and Bees Wax, bought
or taken in payment. muf

FOR SALE BY
PRAGERS & CO.
HOLLAND GENEVA in pipes
and jugs

Pest Dutch Madder in large and small casks
Jeshits Park, Opium, refined Camphor
British and French Allum
Dry and ground in oil best English White Lead.
Pearl Barley
Claret, Hermitage, and Rhine Wine in bottles
German Scythes, and Maryland whet stones
Ironmongery and Hardware
China and Delf ware
Superfine and coarse Broadcloths, different colours
Coatings, Du Sils and Bearskins
Spotted and striped Velvelets
Checks, cotton and linen, 7-8, 8-8, and 11-8
Ditto furniture
Flanders bed Tick, 9-4 and 10-4
Red-Bunts, 7-4 and 8-4
Chardt and fine mens. boys, and girls' Hats
Hatter's Trimmerings assorted
Tucklenbergs, Ombrebrigs, Heilens
Pestillas Royal, Dowlaffes
Fine Flanders Linen and Sheerings
India Tasseries and coloured Lutstrings
Bandano, Barcelona, Romal, Silk and cotton hand-
kerchiefs
Blond Laces and Gauzes
British Sail Duck, No. 1 to 6
Writing Paper of different sizes, Sealing Wax, &c.
ALSO—A fresh and general assortment of BOULT-
ING CLOTHS, and a few pipes, hogheads, and
quartercasks of London particular Madeira WINE.
December 10. w&itf



31
with the head warm: this is not only serviceable to our teeth, but also preserves the sight, and the hearing. Here be full on the treatment of the teeth.

3. Complexion — A beautiful complexion depends upon an agreeable mixture of white and red. The sun injures all complexions; very fair complexions, however, repel his rays, and receive very little injury from them: on the contrary, the darker the complexion, the sooner a dye takes place. — The complexions of the ladies in Great Britain and Ireland are remarkable for an agreeable mixture of white & red owing to the moisture of their atmosphere in that temperate climate. — Frequent washing in this country is an excellent substitute for their moisture; it is also good for health. Washing dissolves, and prevents the collection of, exudations on the human body. Pure water, as rain, or snow water, is the best for this purpose: of this the ancients seem to have been well informed — hence Job IX. 30. If I wash my

+ Indian Meal & weak lye - an excellent

* wash - a brown complexion tans
much sooner than a fair woman

"myself with snow-water, and make my hands
"never so clean". +

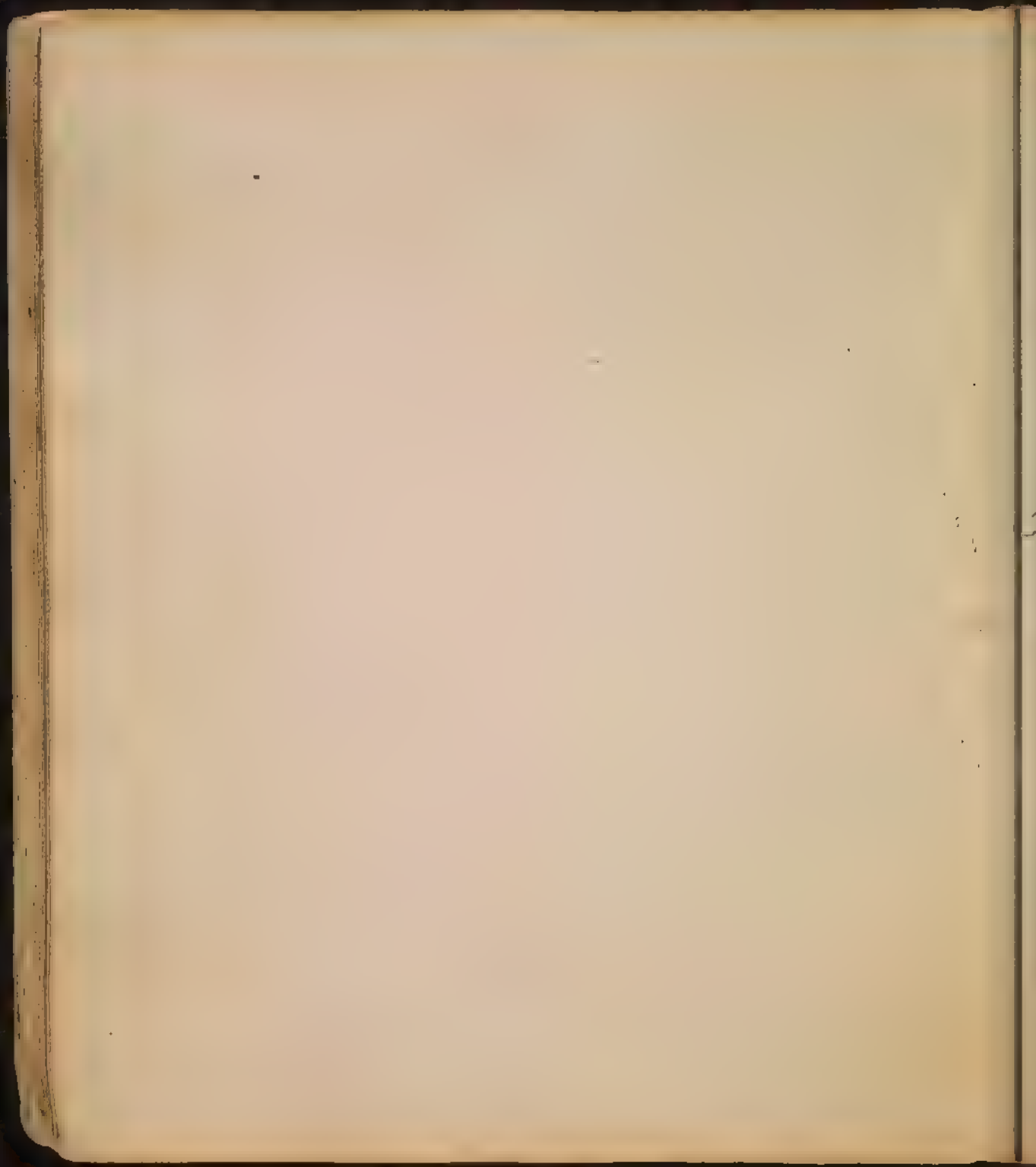
4. Good health is essential to beauty; also, to our pleasure, and happiness, while in this world: therefore, we should ^{be} carefully preserve it. This depends 1st upon moderate exercise; the best exercise, in good weather, is walking, in a pure, and open air - 2^d. Early rising, the morning air, air of hills, and country air, are very pure; and contribute much to health, and beauty: for pure air gives a fresh complexion, and communicates redness to the blood. (* as I aming the Scotch ladies)
- 3^d. Late evening parties should be carefully avoided; Few, who have followed this practice have been blessed with health, or longevity. Such people not only imbibe noxious, and impure, air at a late hour; but they also spend their mornings in sleep; and lose the pure air which they might then breathe: the ^{folly} ~~error~~, of thus inverting the order of nature, by changing night into day, and day into night, generally has its punishment inseparably connected with it. -



4. We should eat moderately of animal food; and that not too highly seasoned; it gives an immoderate degree of ~~white~~ red, and, indeed, a very disagreeable sort of red, attended with pimples.

5. Heavy, and cumbersome, head-dresses injure the health; and, consequently, are prejudicial to beauty.

6th But, above all, avoid cosmetics, and perfumes. Cosmetics, being composed of metalline substances, produce nervous diseases; they also give a yellow tinge to the complexion, so that if a lady be so imprudent as to use them for a while, she can never lay them aside during life. This, then, being the case, I trust the ladies of America will never sacrifice their health, and native beauty, to the use of such ^{artificial ornaments} ~~cosmetic-facials~~ (if I may use the expression) like the ~~artificial~~ ^{artificial} ~~fact-draw~~; But that they will rather be ambitious, like the meridian sun, to shine forth with the unborrowed lustre - as to perfumes, they are poor substitutes for cleanliness; no perfumes can possibly be wanted, unless to counteract disagreeable smells; cleanliness will prevent these.



And, to use an Irishism, the best smell is —
no smell at all.

Having shown how ^{personal} beauty depends upon shape, teeth, complexion, and health; we come next to consider what dependence it has upon the beauties of the mind — It will be sufficient to observe, that without these a lady can no more command respect, or esteem, than a statue can vie with a rational being. Therefore,

5. ^{you} ~~We~~ should preserve innocence — purity of minds and good humours; but above all ^{you} ~~we~~ should store your minds with useful knowledge.

Ignorance has been called the curse of Gods — it gives a vacant eye and face —

"Beauties of soul irradiate all between
the body charms — because the soul is seen."

41
+ General Observations - 1 Dr Fortingalls
Story of Lord maclesfield? 2 qualified by
Dr Cullen of many things unwholesome
not immediately so 3 Dyspepsia - diff:
in diff^r persons - ^{from Insult &c} diff^r periods of life & the
first coming in of particular Aliments - as
fish - Vegetables &c.

Animal Matter - supplied by
Sugar and
Acid - Oil. —

The Lip we drink at our meals the better.
H. inc. Addison's Advice. - No wine till
After Dinner. It weakens the appetite
preternaturally. Carving improper
1 disagreeable sight to see whole Animals
in the shape in which they, pleased us when
alive. 2 Is fatiguing during want of ex-
citability - 3 Disturbs the table like the spoils
Dishes, & deprives 3 or 4 persons of Dinner, on

41
Lecture 11th

Of aliments +

We shall begin by enquiring into the final cause or reason of the frequent returns of appetite. —

Why should so much time be employed in this animal qualification? Why were we not so formed as that one plentiful meal should be sufficient to support our bodies for a week — a month — or even a year?

Two reasons may, probably, be given why this is not the case; and why we are so dependant upon the elements that support our bodies as to require two or three meals a day for our nourishment.

1st It is essential to our happiness that we should retain a constant sense of our Creator upon our minds. To preserve this sense, at all times, our maker has kindly rendered us dependant upon his bounty, and has, by the regular and daily returns of our appetites, implanted a monitor in our bodies to prevent our forgetting him, and

males ^m eat them too quickly.

Waltham improper. Nothing of its folly -
By obliging people to swallow while they
speak lustful - Silence best in eating.
Keeps modest persons from drinking -
Facts - Remarks on

and to remind us of the obligations of gratitude, and obedience which we owe to his goodness. —

The language of Providence, then, in every meal to which we sit down, is — "When this you see
"Remember me"

2. A second use in the frequent returns of our appetites is, they serve to promote conversation, and thereby, increase knowledge, and social happiness by bringing the members of a family — friends — and even strangers, frequently together, for the necessary purposes of eating, and drinking.

I cannot help remarking a further instance of the divine goodness in connecting so much pleasure with the employments of eating and drinking. Had this gratification been left to reason or to instruction, how often would pleasures, business, or indolence have rendered us dead to the necessities of our bodies! and how often would a perverse temper in a child have been the cause of its death! for, if this child was not impelled to eat by the pleasure it derived from eating, it would be as difficult to com-

compel it to eat, as it ^{sometimes} is to make it learn its books.

There is the same relation between different aliments that there is between the notes of music, some agreeing and some disagreeing with each other — The perfection of cooking consists in finding out these relations. — I am disposed to believe the science of cooking is still in its infancy and will remain so till it is rescued from the hands of practical cooks, and made the subject of philosophical experiments, and investigation. I believe there are pleasures to be enjoyed in eating — and that there are degrees of health, and long life, to be derived from the proper, and harmonious, mixture of aliments, that we are yet strangers to. Perhaps discoveries upon this subject may be reserved for some of the female philosophers of this new world.

I shall briefly explain what I mean by the harmony of aliments, by a few examples —
Bread, and meat, are related, and form a harmony ^{where}

when mixed together. Bread, and milk;— bread, and butter;— meat, and salt;— catted, and fresh meat;— mustard, and cold beef;— cabbage, and vinegar;— mutton, and turnips;— venison, and currant jelly;— pork, and apple sauce;— are alike related to each other, alike grateful to the taste, and alike healthy, when taken into the stomach.

Let us next mention a few instances of discord, or, the want of harmony, in aliments.

Fish, and flesh, when mixed together;— bread and pudding;— salt, and sugar;— meat, and sweet sauce;— butter, and onion;— milk and fish;— are all contrary to each other, and disagreeable to the taste; and if they do not offend the stomach it is owing to its peculiar strength, and healthful state.

The same observations apply to drinks. There is the same harmony, and discord, in them, when properly or improperly mixed together.

I shall add one, or two, remarks upon this subject.

1.st The taste, when pure, is an infallible mark of what is healthy in aliments. It is true, the stomach often receives, without rebelling, aliments that are not grateful to the taste: but, this is owing to its peculiar strength. The taste, and the stomach are naturally in union with each other, and, tho' the stomach may forbear long, yet it sooner or later accords with the decisions of taste: thus, fish and flesh are unpleasant when mixed together in the mouth, yet, they may be taken, in succession, with impunity. This is owing to the stomach's not giving an alarm, like the taste, upon the first violence being offered to it. But, attend to the consequences — Persons who have long mixed fish and flesh together in their stomachs cannot digest them — hence, we find, when they eat fish, they prefer eating nothing after it.

2. How shall we account for so many ^{old} people in

6) in high life in all countries? we read of noble-
men of 70, — 80, and even 90, years of age; who fare
sumptuously every day, and yet feel no incon-
venience from it? — I ascribe their health,
and long life, entirely to their living upon
the best of food, mixed in such a manner as
to form a perfect harmony, to the taste, and in
the stomach. It is this agreeable and harmo-
nious mixture of aliments that enables some
persons to eat such large, and frequent, meals,
without much, or any, inconvenience. And it
is the want of this harmony, or proper mix-
ture, I suppose, that makes even the most
wholesome aliments, taken in the most mo-
derate quantities, produce diseases in many
people. The Germans, in this state, are much
afflicted with stomach complaints, owing to
their aliments not being in quality, quantity,
or mixture proportioned to their constant la-
bour —

(a) as to the time of eating much has been said by different Authors. If it be admitted that only one meal of animal food should be eaten in the day, the evening is certainly the best time for taking it.

Rest after a full meal promotes Digestion.

~~The~~ Between the hours of _____ is the best, as it favours perspiration afterwards.

~~Exercise~~ Sleep is proper after eating, provided it is not taken in a horizontal, but in a sitting posture. The Portuguese custom is a good one. They ~~recline~~ sit on the floor after dinner ~~at~~ with their backs against a wall, & support their arms with a chair on each side of them. Where a hearty supper is taken, no meat sh^d. be ate at dinner.

3. Harmonious mixtures are useful - vegetables, of every kind, which are eatable; perfectly harmonize with each other, and by blunting the appetite prevent the eating of an excess of meat -

Of fermentation.

(22)

Fermentation is an intestine motion between dissimilar bodies, or dissimilar elements. All animal, and vegetable bodies undergo it. There are three stages in fermentation - 1st the vinous, as wine, or as beer in its first stage, when it is fit for use -
2. the acetous, as vinegar - and, 3. the putrefactive, when it has become putrid -

The following circumstances are necessary to favour fermentation.

1. Heat - from 70 to 100 degrees; a greater heat than this promotes fermentation too rapidly, and hurries on to the putrefactive stage.
2. Moisture. - Sugar never ferments unless assisted by water or some other liquid -

3. Access of air is necessary —

4. Rest - agitation hurries on too rapidly to the acetous, or putrefactive stages. — and

5. Ferments, in some cases are necessary to hasten it — hence, yeast is used in baking &c.

We shall apply these ^{principles} as we go along. —

Of animal food

It has been warmly contested by some that nature never designed man to feed upon animal food. This doctrine has been supported by many ingenious arguments — But that animals were designed for our use is evident, for the following reasons —

1. The declaration of almighty God in sundry parts of the scriptures — that they were for the use of man.

2. Our teeth are not constructed ^{entirely} similar either to those of the granivorous, ~~herbivorous~~, or carnivorous animals; but, are a mixture of the ~~three~~ ^{two} — hence it is plainly the will of God that we should ^{eat}

the number or nature of the powers of the mind
that are suspended by Sleep. Persons who labour,
or who go to bed after being much fatigued
seldom dream. A full meal - an indolent
life - indisposition - or the application of a
stimulus to any kind to ^{the body} ~~any of the senses~~ - such
whether it be hunger - thirst - heat - cold -
light or sound, generally occasions dreaming.
It is, ^{chiefly} from the action of light
- ~~hence we dream most~~ & sound upon the
^{principally} senses that we dream most in the morning.

- If dreams depend upon natural causes,
the supposition of their being ~~intended~~ ^{intended} to admonish
~~us of future events~~ ^{us of future events} must be highly un-
philosophical. To be ~~affected~~ ^{influenced} by them, ~~in any degree~~ ^{therefore} in ~~any of~~
our opinions or actions is a mark of a
weak mind, or a vulgar education.

"Blindness to the future" was "wisely given"

"That each ~~might~~ ^{might} fill the circle marked by heaven.
I grant that a connection is sometimes perceptible

eat a mixture of vegetable and animal food.

3. Experience shows that this mixture is the most wholesome food for man; for to feed entirely upon either, would soon produce sickness, or debility. 5 By killing animals, we ensure a destruction of animal life — if this were not done — the world would not hold them all. — +

4. If man had been, by nature, designed not to be carnivorous, there would doubtless have been found, somewhere upon the globe, people who do not feed on flesh; which is not the case —

Every animal ^{has long} used, as food, at some time or place — Wild meats are most easy of digestion, for being killed in the chase, and killed without depriving them of their blood; they tend speedily to putrefaction — hence they don't bear long keeping — The inhuman practices of bull-beating, and throwing at cocks, have been invented, to procure substitutes for wild flesh. — Legs of quadrupeds, and wings of wild birds, from being most used, are hardest of digestion.

+ Besides many animals eat animals. — only 2 agreeable to creator.

between dreams & ^{subsequent} ~~future~~ events - but by
no means so often as between subsequent
events and our waking thoughts ^{and these} ~~and these~~
~~less~~ certainly cannot be ascribed to a super-
natural influence upon our minds. In all
these cases where a connection happens
between our dreams & events, it must be
ascribed to what has been very properly
called accidental coincidence.

of animal food from Cullen.
& ^{is} ~~is~~ ^{carinated} ~~carinated~~
Small animals easier digested than ^{male} ~~female~~.
young more soluble ^{than} old - except in weak stomachs
where there is a tendency to acrimony, & albumen
abundant is req^d. - Fat meat easier ^{than} lean - Kept
meat ^{than} fresh killed - Hunted or exercised animals
easier digested. Old animals ^{than} young flesh put on
them digested ^{easier} & perspire easier ^{than} young animals being
more saline. Animal food more nourishing ^{than} ~~than~~
Vegetable - produces plethora & Obesity & irritability.
Kept after eating from energy of brain
being directed to heart & stomach. The legs

Domestic, or tame, animals, being deprived of their blood are less savoury, and harder to be digested than wild ones; grain with exercise is necessary to ^{improve} ~~fatten~~ them, confinement helps to fatten them, but moderate exercise diffuses the fat. They bear keeping, and are made tender by it— but, are much more tender if killed by electricity. Legs of tame fowls are less easy of digestion, than wings, because more used. Ducks, geese, and pigs, should be eaten soon; otherwise they are apt to become rancid by means of the great quantity of oil they contain. Young animals abound with mircillage and are therefore ^{less stimulating} ~~more digestible~~ than ^{old} ~~young~~ ones. Beef and mutton, however, are ~~exceptions~~ to this rule, and are more easy of digestion than veal or lamb: but they must not be too old— beef and mutton are best from 5 to 7 years old. Madame Darconville's history of putrefaction shows that beef and mutton putrify

5

we eat +

Animal food, the better -

Ox - ~~most~~ nourishing - Sheep next lambs
most nourishing that have suckled 6 months.
The lean of fat meats most nourishing -
- Hog nourishing from its fat - pigs lard, from
lard fat - White meats less alkalulent & red - the
last most blood. - Chickens best 1 year old - a white
meat - even more valuable if cock. Capon & hen.
- Curd best - crammed fowl rapid & tender -
Pheasant tough - partridge & quail easy of digestion
Geese & ducks - alkalulent - should not be kept too
long. Animals w^h fly have tough breasts & wings
& tender legs & vice versa. - young pigeons very
alkalulent & tender - eggs wholesome - small
quantity satisfies & nourishes -

+ Fish - Cullen
not the same difference between young & old
as quadrupeds - less perspirable ⁱⁿ meat, but
perhaps equally nourishing - may weaken ^{the} body
by checking appetite from sameness -
Crabs & lobsters like lean fish - not so nourish^{ing}
as fat fish. Do to conclusion. + last p. but two

61
sooner than veal, or lamb - and consequently
are more easy of digestion: the former from
greater strength of stomach, teeth &c. are more
completely animalized than the latter, which
cannot sufficiently chew, nor digest, their vege-
table food; and, therefore ^{they} retain so much of
the ~~essence~~ ^{matter} of these vegetables, in their blood, as
prevents a speedy putrefaction - see the last
page

+ Fish are supposed, by some, to have been the first
food of Adam after his expulsion from the
garden of Eden; which he might probably ^{have} obtained
from the rivers ^{near the garden} ~~in the garden~~ more easily than he
could ^{have} caught any of the beasts of the field which
shunned his presence.

Fish soon become rancid; they should, therefore
be eaten soon after they have been taken out
of the water: they are a solid food, and require
good health to use them - Pepper, vinegar &c
are necessary with this aliment to promote di-
gestion - hence the Africans, are all fond of ^{fish}

high seasoning with it - Butter harmonizes
well with fish - it is also prudent to drink a little
wines, - brandy or other spirit, after a meal of it - hence
the proverb of fish swimming three times - first
in water - second in butter - and, third in wine.

In order to prepare a fish properly much de-
pends upon boiling it sufficiently, but, not too
much - It floats when boiled, and again
sinks when boiled too much. - Mr Henry
of Lancaster restored a fish beginning to be
putrid by keeping it 12 hours in a well of
limestone water - covered with the water.

a corn pudding

Twelve ears grated fine cream $\frac{1}{2}$ lb or butter $\frac{1}{2}$ lb
or milk $\frac{1}{2}$ lb & Butter $\frac{1}{2}$ lb - baked $\frac{1}{2}$ an hour
in a dish ^{the covering of the} ~~the~~ corn to be placed under & around the
pudding except in one place.

1. Whence is heat derived?
2. Is it lodged in all bodies?
3. Does heat ascend or descend?
4. How do you prove it?
5. Does heat contract or expand all bodies?
6. How do you prove that there is heat in snow?
7. How do you prove heat to be in ice?
8. When is fire necessary in our apartments?
9. Which is the best method of extinguishing fire in chimneys?
10. How do you prevent the increase of Mosquitoes?
11. Which is the most effectual method of destroying bugs?
12. How do you preserve washed clothes from rotting in summer?
13. How are the stains of red wine or cherries &c. taken out of linen?

14. Can you tell when fish are boiled sufficiently?
15. How do you preserve eggs?
16. How are herbs preserved?
17. Is tea wholesome?
18. What do you think of coffee?

++ Oysters - best raw & fresh - very
slow & difficult of perspiration - hence nourish
most.

1873

22

my
sh

Recommend the
Use of Liq. Land: instead of
Spirits in families.

Remarks on Dinners - 1 cold rooms - Canada -
2 Earthen & China plates
- pewter best -
3 carving - 4 health &
5 Silence - food eaten best
& best chewed. - the
less we drink with
our Dinners the better.

Hard to tell ^{if} is wholesome & ^{if} not. - Stomach
like conscience sleeps under violence - & impro-
per Alim^t often does not produce its bad effects
for years - Moderation in Quantity a good
rule.

13 - Mrs - Da - J - r

cro

The Twelve Signs.

- ♈ Aries, or the Ram.
♉ Taurus, the Bull.
♊ Gemini, the Twins.
♋ Cancer, the Crab.
♌ Leo, the Lion.
♍ Virgo, the Virgin.
♎ Libra, the Balance.
♏ Scorpio, the Scorpion.
♐ Sagittarius, the Archer.
♑ Capricornus, the Goat.
♒ Aquarius, the Waterbearer.
♓ Pisces, the Fishes.

Multiplication Table.

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Money.

f. s. d. q.

1—20—12—4

Avoirdupois Weight.

T. C. Q. lb. oz. dr.

1—20—4—28—16—16.

Troy Weight.

lb. oz. dwt. gr.

1—12—10—24.

Apothecaries Weight.

lb. oz. dr. scr. gr.

1—12—8—3—20.

Wine Measure.

T. P. H. G. Q. P. G.

1—2—2—64—4—1—4.

Long Measure.

D. M. F. P. Y. F. J. B.

1—12—3—12—3—12—3.

360 Degrees are the circumference of the Globe.

Land Measure.

A. R. P. Y.

1—4—40—54.

Dry Measure.

B. P. G. P. Q. P.

1—4—2—2—2.

Cloth Measure.

Y. Q. N. In.

1—4—4—24.

Time.

Y. D. H. M. S.

1—12—60—60—60.

Thirty days hath September,

April, June, and November;

February hath twenty-eight* alone,

All the rest have thirty-one.

* Twenty-nine, every 4th or leap year.

Numeration.

Millions.	Thousands.	Hundreds.	Tens.	Units.
C	C	C	T	U
X	X	X	X	X
9	8	7	6	5
4	3	2	1	0
3	0	5	2	1
2	0	4	6	8
4	0	2	5	3
8	2	0	7	5
6	0	0	9	8
5	0	0	1	0
7	0	0	0	0
9	1	0	0	0
4	0	0	0	0

Pence Table.

d.	s.	d.
20	1	8
30	2	6
40	3	4
50	4	2
60	5	0
70	5	10
80	6	8
90	7	6
100	8	4
110	9	2
120	10	0

Numerical Letters.

1 5 10 50 100 500 1000
I. V. X. L. C. D. M.

MDCCLXXXVII.

BOOK

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